

**PEER REVIEW
COORDINATING DRAFT**

**TASK ANALYSIS
FOR**

**MAINTAIN WEAPONS SYSTEMS AND EQUIPMENT
(CRITICAL COMBAT FUNCTION 31)**

AS ACCOMPLISHED BY A BATTALION TASK FORCE

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**Task Analysis for Maintain Weapons Systems
and Equipment as Accomplished by a Battalion
Task Force. Critical Combat Function 31 (CCF 31)**

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BDM Federal, Inc.

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13. ABSTRACT (Maximum 200 words) The purpose of CCF 31 is to preserve and repair task force weapons systems and equipment; providing the commander with the maximum possible combat power. The outcomes include: 1) Equipment is maintained and battle damage repaired to achieve and maintain an Operational Ready (OR) rate that supports the TF commander's intent. 2) Inoperable equipment is recovered and evacuated in to the level of maintenance facilities needed for repair. 3) Repair parts system controlled substitution and cannibalization are managed to maximize combat systems repaired and returned to operation. 4) Required organizational level work is performed; GS and DS level work is coordinated, processed, and monitored. 5) Maintenance and Operationally Ready (OR) status is constantly monitored and accurately reported during all phases of the TF mission (Plan, Prepare, Execute).				
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PREFACE

This task analysis of **Maintain Weapons Systems and Equipment, Critical Combat Function 31** (CCF 31), is an intermediate product of the process of developing a training strategy for the CCF. The analysis reflects tasks, products, players and processes in sequence necessary to providing maintenance for a heavy battalion task force.

CRITICAL COMBAT FUNCTIONS: *The integration of related players and tasks that represent a source of combat power. The synchronization of critical combat functions provides maneuver commanders at any echelon with a definable outcome that materially affects the battle.*

The battle phases PLAN, PREPARE, and EXECUTE relate to the entire battalion task force (TF) battle vice phasing for this particular CCF.

Maintenance of weapon systems and equipment is a continuous task force action. Within the TF there is an continuous flow of requests, reports, and actions to preserve and enhance the availability of Task Force weapon systems and equipment. Since the analysis must have a start point it begins with the receipt of the brigade maneuver and logistic order (Planning Phase), continues through the maintenance preparation of the task force for battle (Preparation), maintenance support during the ensuing engagement (Execution), and on through consolidation and reorganization of the TF in preparation for a continuation or change of mission.

"The nature of the modern battlefield demands that repairs be made quickly and at areas near as possible to the point of failure or damage. Maintenance assets are pushed as far forward as possible consistent with the tactical situation to repair inoperable and damaged equipment and to return it to the battle as quickly as possible." (FM 100-10, at pg. 8-3).

Establishing, operating and relocating the brigade support area (BSA), to include its defense, conduct of rear area combat operations (RACO), and operation of the task force and company/team trains are important to this CCF. These activities are important for all CSS activity and are essentially the same for each CCF. In order to save time, the details are described in the task analysis of CCF 29, Conduct Supply Operations, and are not repeated in this CCF with the exception of those tasks and processes which the analyst believes would be candidates for special emphasis by the TF commander.

The level of detail and tasks were selected by the analyst as important to the analysis of the CCF from the perspective of the Task Force training strategy. Compliance with branch training strategies and proficiency at AMTP tasks and subtasks are recognized to be the responsibility of TF subordinate commanders. However, some tasks and subtasks are critical to TF success; these, then, are included in this analysis because the TF commander may wish to emphasize them in his training guidance.

In this analysis, approximately __% of the specific task titles are taken directly from the appropriate ARTEP Mission Training Plan (MTP). The remainder are derived titles that may apply to only part of a subtask or some other element of the MTP; to multiple subtasks from different, but related, tasks; or to a task that is not directly stated in the MTP, but is implied by other tasks or by requirements in an applicable field manual (FM) or other related document. While the wording of each task is sometimes a direct quote from the MTP, generally, the wording of the tasks is an integration of tasks and requirements from the MTPs, applicable FMs, and other documents.

**INDEX OF
CRITICAL COMBAT FUNCTIONS**
Grouped By Battlefield Operating System (BOS)

INTELLIGENCE	(1)	Conduct Intelligence Planning
	(2)	Collect Information
	(3)	Process Information
	(4)	Disseminate Intelligence
MANEUVER	(5)	Conduct Tactical Movement
	(6)	Engage Enemy with Direct Fire and Maneuver
AIR DEFENSE	(16)	Take Active Air Defense Measures
	(17)	Take Passive Air Defense Measures
FIRE SUPPORT	(7)	Employ Mortars
	(8)	Employ Field Artillery
	(9)	Employ Close Air Support
	(10)	Conduct Electronic Collection and Jamming
	(11)	Conduct Battlefield PsyOps
	(12)	Employ Chemical Weapons
	(13)	Conduct Counter Target Acquisition Operations
	(14)	Employ Naval Gunfire
	(15)	Coordinate, Synchronize and Integrate Fire Support
MOBILITY AND SURVIVABILITY	(21)	Overcome Obstacles
	(22)	Enhance Movement
	(23)	Provide Countermobility
	(24)	Enhance Physical Protection
	(25)	Provide Operations Security
	(26)	Conduct Deception Operations
	(27)	Provide Decontamination
COMMAND AND CONTROL	(18)	Plan for Combat Operations
	(19)	Direct and Lead Unit During Preparation for the Battle
	(20)	Direct and Lead Units in Execution of Battle
COMBAT SERVICE SUPPORT	(28)	Provide Transport Services
	(29)	Conduct Supply Operations
	(30)	Provide Personnel Services
	(31)	Maintain Weapons Systems and Equipment
	(32)	Provide Health Services
	(33)	Treat and Evacuate Battlefield Casualties
	(34)	Conduct Enemy Prisoners of War (EPW) Operations
	(35)	Conduct Law and Order Operations
	(36)	Conduct Civil Affairs Operations
	(37)	Provide Sustainment Engineering
	(38)	Evacuate Non-combatants from Area of Operations
	(39)	Provide Field Services

STRUCTURE OF CRITICAL COMBAT FUNCTIONS RELEVANT TO BATTALION TASK FORCE OPERATIONS

CRITICAL COMBAT FUNCTION: *The integration of related players and tasks that represent a source of combat power. The synchronization of critical combat functions provides maneuver commanders at any echelon with a definable outcome that materially affects the battle.*

- I. **Intelligence BOS** — The ways and means of acquiring, analyzing and using knowledge of the enemy, weather and terrain required by a commander in planning, preparing and conducting combat operations. These CCF are continuous throughout the planning, preparation and execution phases of the battle.
 1. **CCF (1) Conduct Intelligence Planning** — The development and coordination of information relative to the enemy, weather and terrain prior to and during the development of the unit OPORD; the planning to collect information from battlefield sources and to acquire intelligence from other headquarters. Focus of this CCF is the Intelligence Preparation of the Battlefield (IPB). This CCF addresses:
 - a. Reconnaissance and Surveillance plan.
 - b. Integrated threat templates (doctrinal; event; input to DST).
 - c. Terrain and Weather analysis.
 2. **CCF (2) Collect Information** — Obtaining information in any manner from TF elements and from sources outside the TF (e.g., higher headquarters; adjacent units); this CCF includes the tasks associated with managing the processes and activities necessary to collect battlefield information which may eventually be used to provide intelligence relative to the enemy, terrain and weather. This CCF addresses:
 - a. Information collected as a result of R & S plan.
 - b. Continuous information collection and acquisition from all sources.
 3. **CCF (3) Process Information** — The conversion of information into intelligence through collation, evaluation, analysis, integration and interpretation in a continual process. This CCF addresses:
 - a. Evaluation of threat information.
 - b. Evaluation of physical environment information.
 - c. Integration of intelligence information.
 - d. Development of enemy intentions.
 - e. Development of targeting information.
 - f. Preparation of intelligence reports.
 - g. Update of situational template.
 - h. Provision of battlefield area reports.
 4. **CCF (4) Disseminate Intelligence** — Transmission of information by any means (verbal, written, electronic etc.), from one person or place to another to provide timely dissemination of critical intelligence to all appropriate members of the combined arms team. This CCF addresses:
 - a. The sending of processed intelligence in a timely manner to those on the combined arms team who can by its receipt, take appropriate actions to accomplish the mission. This includes intelligence on the enemy, terrain and weather.

- b. The sending of raw intelligence directly from those responsible for reconnaissance and surveillance to the commander should that raw intelligence be time sensitive (and not be subject to receipt and processing by intelligence analysts).
 - c. Dissemination of battlefield reports.

- II. **Maneuver BOS** — The employment of direct fire weapons, platforms and systems through movement and fire and maneuver to achieve a position of advantage in respect to enemy ground forces, in order to accomplish the mission. The direct fire weapons are: tank guns; BFV 25mm; anti-tank guns and rockets; attack helicopter guns and rockets; small arms; crew served weapons; directed energy weapons systems.
 - 1. **CCF (5) Conduct Tactical Movement** — Position direct fire weapons systems relative to the enemy to secure or retain positional advantage making full use of terrain and formations. Tactical movement occurs when contact with the enemy is likely or imminent but direct fire engagement has not yet occurred. Units supporting maneuver units are included. This CCF addresses:
 - a. Subordinate element OPORD preparation and dissemination.
 - b. Preparation for movement.
 - c. Movement, mounted and dismounted; on and off road.
 - d. Closure of movement — tactical assembly area; tactical positions.
 - e. Navigation.
 - f. Force protection.
 - g. Air movement.
 - 2. **CCF (6) Engage Enemy with Direct Fire and Maneuver** — Entering into ground combat with the enemy using direct fire and/or close combat in order to destroy the enemy or cause him to withdraw. This CCF relates only to those direct fire weapons systems associated with the Maneuver BOS. This CCF is initiated with the OPORD at the completion of the planning phase of the battle and includes all tasks associated with subordinate echelon planning, preparation and execution of the battle. This CCF addresses:
 - a. Subordinate element OPORD preparation and dissemination.
 - b. Preparation of engagement areas.
 - c. Rehearsals of battle plans.
 - d. Pre-combat prepare to fire checks.
 - e. Target acquisition.
 - f. Fire control and distribution.
 - g. Fratricide.
 - h. Conduct close combat.
 - i. Integration of direct fire with maneuver.
 - j. Control of terrain.
 - k. Prestocked ammunition.
 - l. Resupply during operations.
 - m. Maintenance during operations.
 - n. Consolidation and reorganization.

- III. **Fire Support BOS** — The collective, coordinated, and synchronized use of target acquisition data, indirect fire weapons, armed aircraft (less attack helicopters) and other lethal and non-lethal means against ground targets in support of maneuver force operations and to achieve the commanders intent and scheme of maneuver. The Fire Support BOS

addresses these weapons: mortars; field artillery; close air support; electronic measures; naval gunfire.

1. **CCF (7) Employ Mortars** — Employment of mortars by the maneuver unit to place fires on the enemy or terrain to support the commander's concept and intent. This CCF initiates with the receipt of an OPORD by the maneuver commander and address those tasks required during the preparation and execution phases of the battle. This CCF addresses:
 - a. Subordinate element OPORD preparation and dissemination.
 - b. Prepare to fire checks.
 - i. Rehearsals.
 - c. Pre-combat checks.
 - d. Development of order to fire.
 - e. Tactical movement.
 - f. FDC operations.
 - g. Target engagements with illumination, smoke, HE.
 - h. Sustainment operations.
2. **CCF (8) Employ Field Artillery** — The ways and means employed by the maneuver unit to cause indirect artillery fires to be placed on the enemy or terrain to support the commander's concept and intent. This CCF initiates upon receipt of an OPORD by the maneuver commander and includes tasks performed during the preparation and execution phases of the battle. The Fire Support Coordination tasks necessary to integrate the field artillery and the maneuver units are the primary focus. This CCF does not address those field artillery tasks associated directly with those actions taken by the batteries of the artillery battalion in the conduct of their support mission such as FDC operations, gun operations, etc. This CCF addresses:
 - a. Fire Support — Maneuver unit rehearsals.
 - b. FSE operations during the preparation and execution phase of the battle.
 - c. FSO and FIST operations in coordination with their maneuver commander.
 - d. Positioning and movement within the maneuver unit sector or zone.
 - e. Indirect fire missions in support of maneuver commander's concept and intent.
 - f. Sustainment operations.
 - g. Indirect fire planning as battlefield METT-T change.
3. **CCF (9) Employ Close Air Support** — Planning for, requesting and employing armed aircraft (less attack helicopters) in coordination with other fire support (lethal and non-lethal) against ground targets in support of the maneuver force commander's concept and intent. This CCF addresses:
 - a. Air-ground attack requests.
 - b. Air space coordination and management.
 - c. Air Liaison Officer, Forward Air Controller; other Army Fire Support Coordination Officer; USN/USMC Bde Team Commander, SALT-O and FCT-O tasks that enable air to ground attacks.
4. **CCF (10) Conduct Electronic Collection and Jamming** — Actions taken to deny the enemy effective command, control and communications of his own tactical force in support of maneuver commander's concept and intent. This CCS includes jamming, deception, and collection.
5. **CCF (11) Conduct Battlefield PsyOps** — Conduct psychological activities as an integral part of combat operations to bring psychological pressure to bear on enemy

forces and civilians under enemy control in the battle area, to assist in the achievement of tactical objectives in support of maneuver commander's concept and intent.

6. **CCF (12) Employ Chemical Weapons** — Employ chemical agents or other means to degrade enemy capabilities in support of maneuver commander's concept and intent.
 7. **CCF (13) Conduct Counter Target Acquisition Operations** — Suppress (e.g. using smoke or dazzling illumination) or degrade enemy direct observation, optics, radar, sensors, electronic DF equipment, and imaging systems in support of maneuver commander's concept and intent.
 8. **CCF (14) Employ Naval Gunfire** — The means and ends to provide naval gunfire in support of the maneuver commander's tactical operation.
 9. **CCF (15) Coordinate, Synchronize and Integrate Fire Support** — Coordination of all fire support means in support of the maneuver commanders concept and intent. This CCF addresses the preparation and execution of tasks necessary to integrate the fire support detailed in the OPORD. The CCF integrates CCF 7-14 in support of maneuver commander's concept and intent.
- IV. **Air Defense BOS** — The means and measures organic or assigned to the maneuver commander which when employed successfully will nullify or reduce the effectiveness of attack by hostile aircraft or missiles after they are airborne.
1. **CCF (16) Take Active Air Defense Measures** — Application of firepower to destroy enemy air targets. This CCF addresses the coordinating tasks which enable the maneuver commander to successfully employ any attached or assigned air defense weapons system as well as the tasks necessary to employ all organic weapons systems against enemy air targets. This CCF addresses:
 - a. Employment of Air Defense Artillery guns and missiles.
 - b. Employment of maneuver unit weapons systems such as small arms, automatic weapons, BFV 25 mm and TOW missiles, tank main gun against enemy air.
 - c. Airspace management.
 - d. Early warning.
 - e. Sustainment.
 2. **CCF (17) Take Passive Air Defense Measures** — The protection of the maneuver force from enemy air by means other than weapons. This CCF will focus on the preparation and execution phases of the battle. This CCF addresses:
 - a. Early warning.
 - b. Dispersion.
 - c. Cover and concealment.
 - d. Air watch.
 - e. Deception.
- V. **Command and Control BOS** — The way and means a maneuver commander exercises authority and direction over organic and assigned combat power in the accomplishment of the mission.

1. **CCF (18) Plan for Combat Operations** — The integration of all members of the combined arms team in the coordinated development of the maneuver unit Operations Order which will guide the activities of the combined arms team in conducting combat operations to accomplish assigned missions. The product/outcome of this CCF is a briefed, understood OPORD. This CCF addresses:
 - a. Receipt and analysis of higher HQ OPORD.
 - b. Issuance of Warning Order.
 - c. Restated mission statement.
 - d. Commander's estimate process/troop leading procedures.
 - e. Commander's guidance.
 - f. Mission analysis (includes course of action development).
 - g. Decision brief to commander.
 - h. Development of a synchronized OPORD.
 - i. Reproduction and distribution of OPORD to all participants.
 - j. Briefing of OPORD; understanding of order by participants.
 - k. FRAGO planning and issue.

2. **CCF (19) Direct and Lead Unit during Preparation for the Battle** — The ways and means to prepare combined arms task force for the battle so that the combined arms task force is ready to support the maneuver commander's concept and intent. This CCF addresses:
 - a. Commander's activities.
 - b. Communicating information.
 - c. Briefbacks and backbriefs.
 - d. Rehearsals.
 - e. Management of the means of communicating information.
 - f. Maintaining and updating information and force status.
 - g. Managing information distribution.
 - h. Decisions to act or change ongoing actions.
 - i. Confirming IPB through the reconnaissance effort.
 - j. Determining actions to implement decisions.
 - k. Providing command presence.
 - l. Maintaining unit discipline.
 - m. Synchronizing tactical operations (e.g., execution matrix DST).
 - n. TOC operations (e.g., staff integration and battle tracking).
 - o. Continuity of command.
 - p. Second in command (2IC responsibilities).
 - q. Continuous and sustained operations.
 - r. Communications (e.g., planning, installation and operation of system, management, site selection).

3. **CCF (20) Direct and Lead Units In Execution of Battle** — The ways and means to command and control in the combined arms task force execution of the battle plan (engaging the enemy in battle) to accomplish the maneuver commander's concept and intent. This CCF addresses:
 - a. Directing the conduct of the battle.
 - b. Issue orders.
 - c. Command presence.
 - d. Information distribution.
 - e. Decide on need for action or change.
 - f. Maintaining unit discipline.
 - g. Synchronizing tactical operations.

- h. TOC operations (includes CP displacement, security, survivability).
- i. Continuity of command (e.g., C2 redundancy).
- j. Second in command (2IC) responsibilities.
- k. Continuous and sustained operations.
- l. Consolidation and reorganization.

VI. **Mobility and Survivability BOS** — The ways and means of the force that permit freedom of movement, relative to the enemy, while retaining the task force ability to fulfill its primary mission as well as the measures the force takes to remain viable and functional by protection from the effects of enemy weapons systems and natural occurrences.

1. **CCF (21) Overcome Obstacles** — Enabling the maneuver force to maintain its mobility by removing or clearing/reducing natural and man-made obstacles. This CCF will initiate after receipt of the OPORD and address subordinate echelon planning as well as task force preparation and execution tasks necessary to achieve the maneuver commander's concept and intent. This CCF addresses:
 - a. Breach obstacle. Clearing a path or lane for personnel and equipment through a battlefield obstacle.
 - b. Cross gaps. Passing through or over any battlefield terrain feature, wet or dry, that is too wide to be overcome by organic/self bridging.
2. **CCF (22) Enhance movement** — Provision of adequate mobility for the maneuver unit in its area of operations. This CCF addresses:
 - a. Construction and repair of combat roads and trails.
 - b. Construction or repair of forward airfields.
 - c. Facilitating movement on routes. (This includes control of road traffic and control of refugees and stragglers.)
 - d. Tracking status of routes.
 - e. Host nation support.
3. **CCF (23) Provide Countermobility** — Delaying, channeling, or stopping offensive movement by the enemy consistent with the commander's concept and intent by enhancing the effectiveness of friendly direct and indirect weapons systems. This CCF addresses:
 - a. Emplacement of mines and complex obstacles.
 - b. Digging tank ditches.
 - c. Creation of road craters with explosives.
 - d. Terrain enhancement.
4. **CCF (24) Enhance Physical Protection** — Providing protection of friendly forces on the battlefield by enhancing the physical protection of personnel, equipment and weapons systems, and supplies. This CCF addresses:
 - a. Construction of fighting positions.
 - b. Preparation of protective positions.
 - c. Employment of protective equipment.
5. **CCF (25) Provide Operations Security** — Denying information to the enemy about friendly capabilities and intentions by identifying, controlling, and protecting indicators associated with planning and conducting military operations. This CCF addresses:

- a. Analysis to determine key assets and threats to them.
 - b. Cover and concealment.
 - c. Camouflage.
 - d. Noise and light discipline.
 - e. Counter reconnaissance.
 - f. Smoke/obscurants.
 - g. Physical security measures.
 - h. Signal security.
 - i. Electronic security.
6. **CCF (26) Conduct Deception Operations** — Taking actions to mask the real objectives of tactical operations in order to delay effective enemy reaction. This CCF addresses:
- a. Physical deception.
 - b. Electronic deception.
7. **CCF (27) Provide Decontamination** — Making any person, object or area safe by absorbing, destroying, neutralizing, making harmless or removing chemical or biological agents, or by removing radioactive material. This CCF addresses:
- a. Decontamination of individual soldiers and equipment.
 - b. Decontamination of weapon systems and supplies.
 - c. Hasty and deliberate decontamination.

VII. Combat Service Support BOS — The support, assistance and service provided to sustain forces, primarily in the area of logistics, personnel services and health services.

1. **CCF (28) Provide Transport Services** — Providing or coordinating for transportation which will assure sustainment support operations in support of the maneuver commander. Upon receipt of an OPORD, this CCF addresses preparation and execution tasks necessary to achieve transportation support of the maneuver force. This CCF addresses:
- a. Movement of cargo, equipment and personnel by surface or air.
 - b. Loading, transloading and unloading material and supplies.
2. **CCF (29) Conduct Supply Operations** — Providing the items necessary to equip, maintain and operate the force during the preparation and execution phases of the battle. This CCF addresses:
- a. Requesting, receiving, procuring, storing, protecting, relocating and issuing supplies to the specific elements of the force.
 - b. Providing munitions to weapons systems.
 - c. Providing fuel and petroleum products to equipment and weapons systems.
 - d. Reporting status.
3. **CCF (30) Provide Personnel Services** — Management and execution of all personnel-related matters to sustain the force. This CCF addresses:
- a. Personnel Administrative Services.
 - 1) Replacement, casualty reporting.
 - 2) Awards and decorations.

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- 3) Postal Operations.
 - 4) Promotions, reductions.
 - b. Financial services.
 - c. Unit Ministry team.
 - d. Legal.
 - e. Public Affairs.
 - f. Reporting personnel status.
 - g. Preservation of the force through safety.
 - h. Management of stress.
4. **CCF (31) Maintain Weapons Systems and Equipment** — Preservation and repair of weapons systems and equipment. This CCF includes the provision of repair parts and end items to all members of the combined arms team before, during and after the battle. Included also is doctrinal echeloning of maintenance (organization, DS, GS). This CCF addresses:
- a. Preventative Maintenance.
 - b. Recovery.
 - c. Diagnosis, substitution, exchange, repair and return of equipment and weapons systems to the combined arms force.
 - d. Reporting status.
5. **CCF (32) Provide Health Services** — Performance, provision or arrangement for health services regardless of location, to promote, improve, conserve or restore the mental or physical well-being of individuals or groups. This CCF addresses
- a. Preventive medicine.
 - b. Field sanitation.
6. **CCF (33) Treat and Evacuate Battlefield Casualties** — Application of medical procedures on battlefield casualties beginning with "buddy aid" through trained medical personnel. The CCF includes movement of casualties from the forward edge of the battlefield back to division-level medical facilities. This CCF addresses:
- a. Triage of battlefield casualties.
 - b. Treatment and movement of casualties to rear (medevac).
 - 1) Identification of levels of care and locations.
 - 2) Synchronization and coordination of movement of medical facilities to ensure continuity of care.
 - 3) Establishment and maintenance of communications with redundant means.
 - 4) Rehearsals.
 - 5) Resupply.
 - c. Evacuation:
 - 1) Ground ambulance.
 - 2) Aero medevac.
 - 3) Non-standard evacuation.
 - d. Handling and processing the remains of soldiers who have died of wounds.
 - e. Reporting status.
7. **CCF (34) Conduct Enemy Prisoners of War (EPW) Operations** — The collection, processing, evacuation and safeguarding of enemy prisoners of war. This CCF addresses:
- a. Collecting and evacuating EPW.

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- b. Searching, segregating, safeguarding, silencing, and rapid rearward movement of EPW.
- 8. **CCF (35) Conduct Law and Order Operations** — Enforcement of laws and regulations and maintenance of units and personnel discipline.
- 9. **CCF (36) Conduct Civil Affairs Operations** — Conduct of those phases of the activities of a tactical commander which embrace the relationship between the military forces and civil authorities, and the citizens in a friendly or occupied country or area when U.S. military forces are present.
- 10. **CCF (37) Provide Sustainment Engineering** — The repair and construction of facilities and lines of communication. This CCF addresses:
 - a. Rear area restoration.
 - b. Construction and maintenance of lines of communication (roads, railroads, ports, airfields).
 - c. Construction support:
 - 1) Marshaling, distribution and storage facilities.
 - 2) Pipelines.
 - 3) Fixed facilities.
 - 4) Drill wells.
 - 5) Dismantlement of fortifications.
- 11. **CCF (38) Evacuate Non-combatants from Area of Operations** — The use of available military and host-nation resources for the evacuation of US forces, dependents, US government civilian employees, and private citizens (US and other). This CCF addresses:
 - a. Medical support.
 - b. Transportation.
 - c. Security.
 - d. Preparation of temporary shelters.
 - e. Operation of clothing exchange facilities.
 - f. Operation of bathing facilities.
 - g. Graves registration.
 - h. Laundry.
 - i. Feeding.
- 12. **CCF (39) Provide Field Services** — Performance of service logistics functions by and for Army elements in the field. This CCF addresses:
 - a. Clothing exchange.
 - b. Bathing facilities.
 - c. Graves registration.
 - d. Laundry and clothes renovation.
 - e. Bakeries.
 - f. Feeding (rations supply, kitchens).
 - g. Salvage.

OUTCOMES AND PURPOSE OF CCF 31

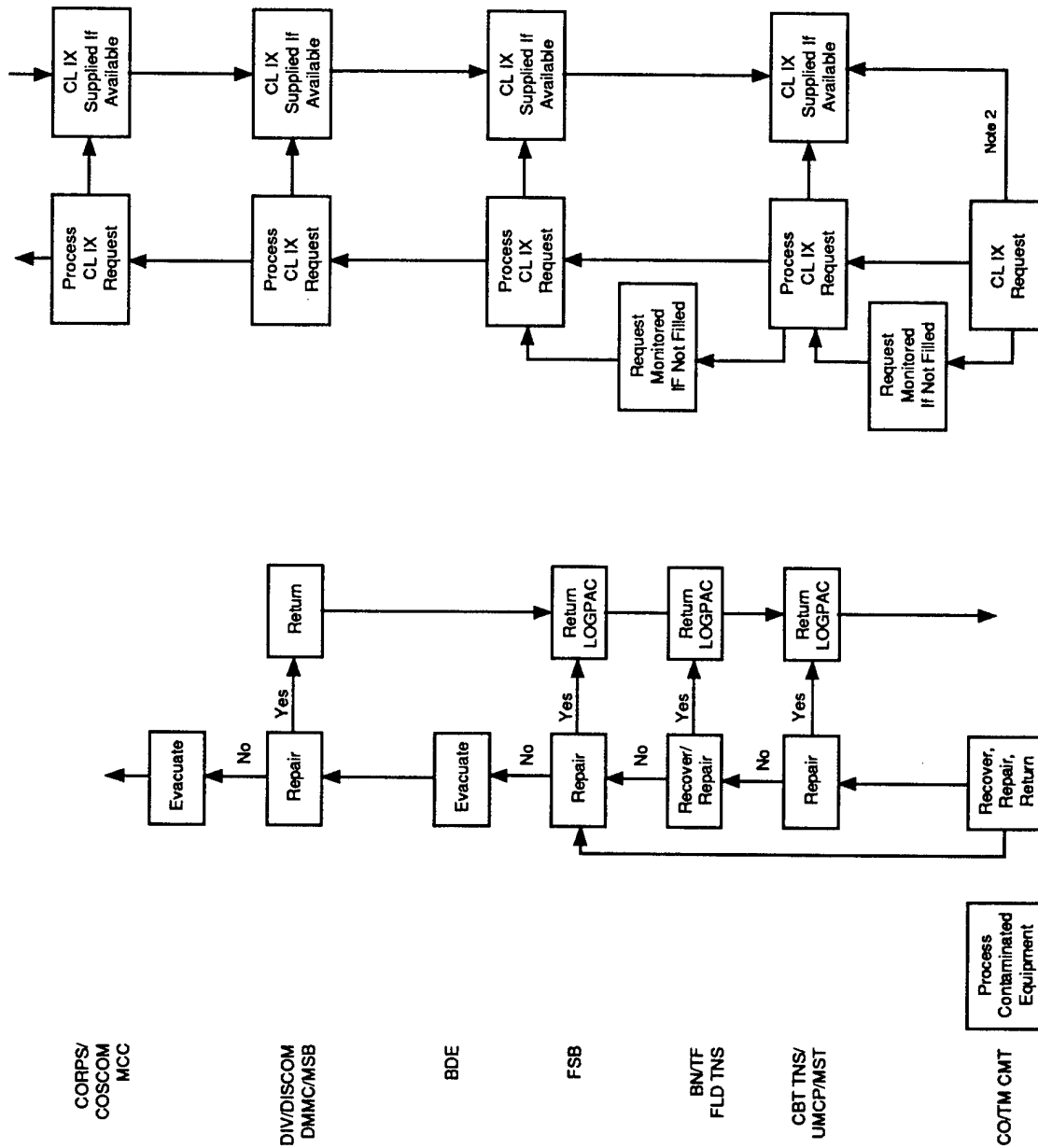
OUTCOMES

1. Equipment is maintained and battle damage repaired to achieve and maintain an Operational Ready (OR) rate that supports the TF commander's intent.
2. Inoperable equipment is recovered and evacuated in to the level of maintenance facilities needed for repair.
3. Repair parts system controlled substitution and cannibalization are managed to maximize combat systems repaired and returned to operation.
4. Required organizational level work is performed; GS and DS level work is coordinated, processed, and monitored.
5. Maintenance and Operationally Ready (OR) status is constantly monitored and accurately reported during all phases of the TF mission (Plan, Prepare, Execute).

PURPOSE

To preserve and repair task force weapons systems and equipment; providing the commander with the maximum possible combat power.

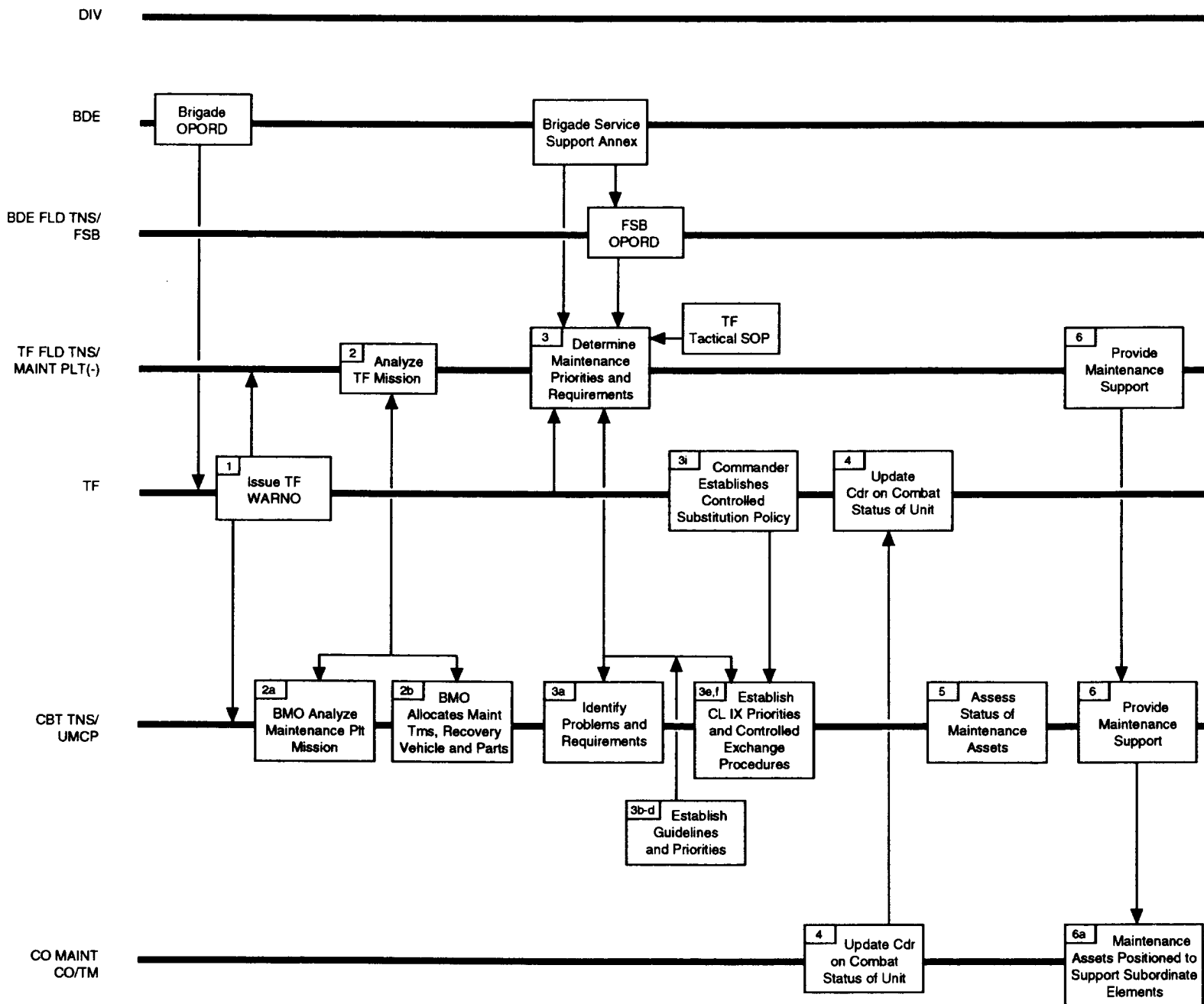
MAINT/CLIX FLOWCHART



Note 1: This chart depicts the repetitive flow of maintenance and repair parts that occur continuously during all mission phases.

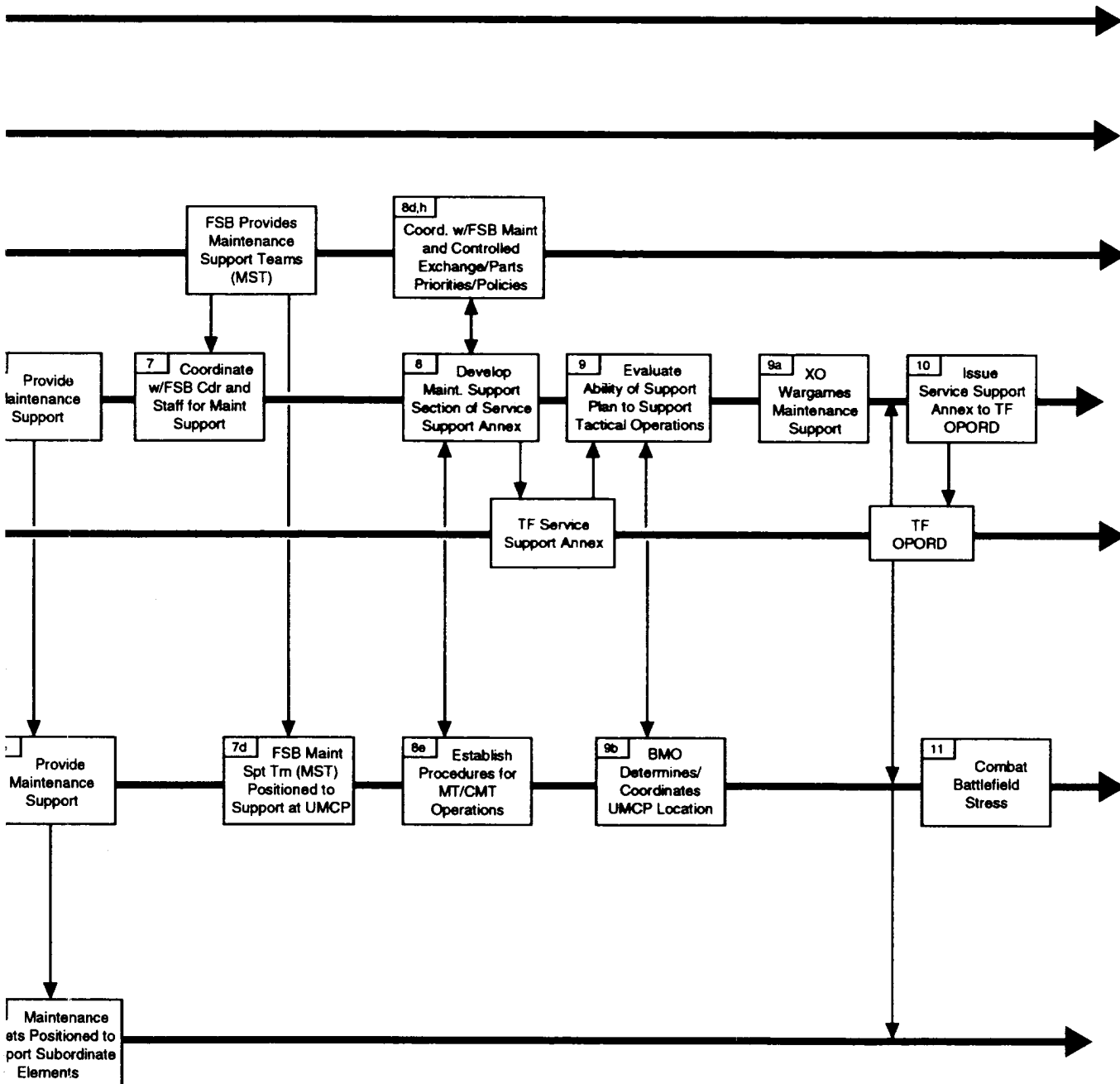
Note 2: User pick-up.

TASK FLOW PLAN

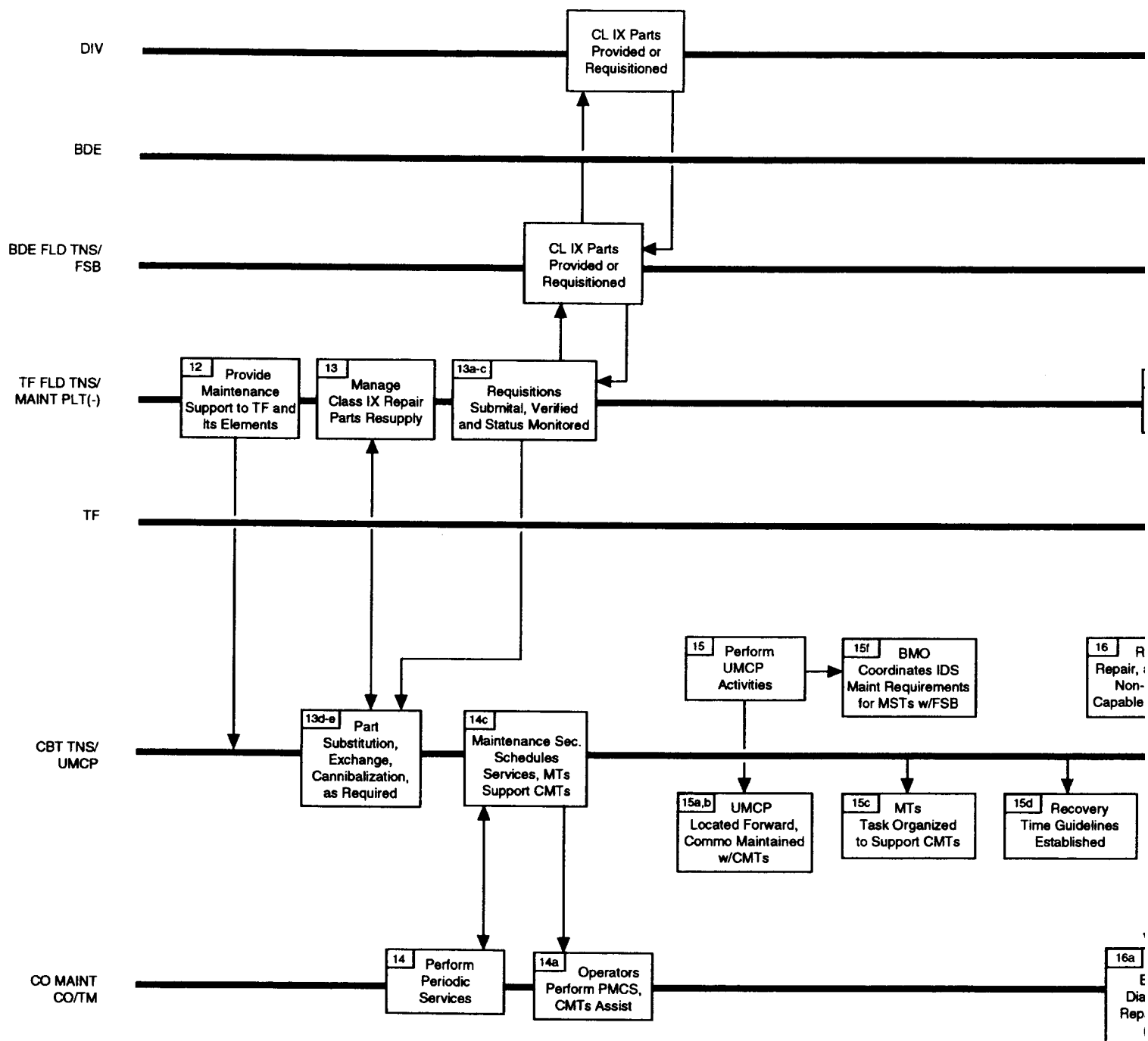


○ CCF □ (outside) Input or Output (inside) Task

FLOW AN

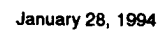


TASK FLOW PREPAR

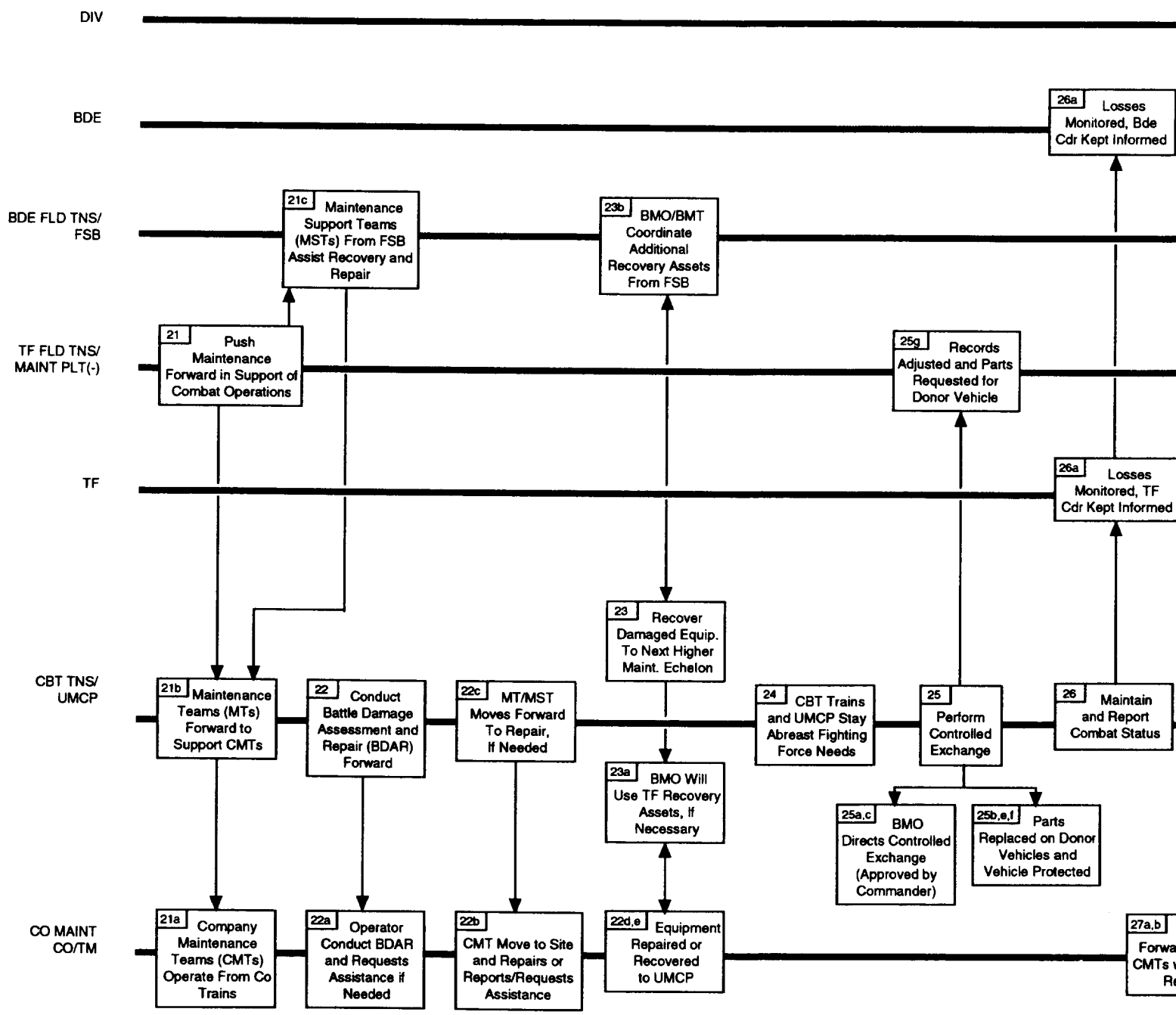


○ CCF □ (outside) Input or Output (inside) Task

K FLOW EPARE



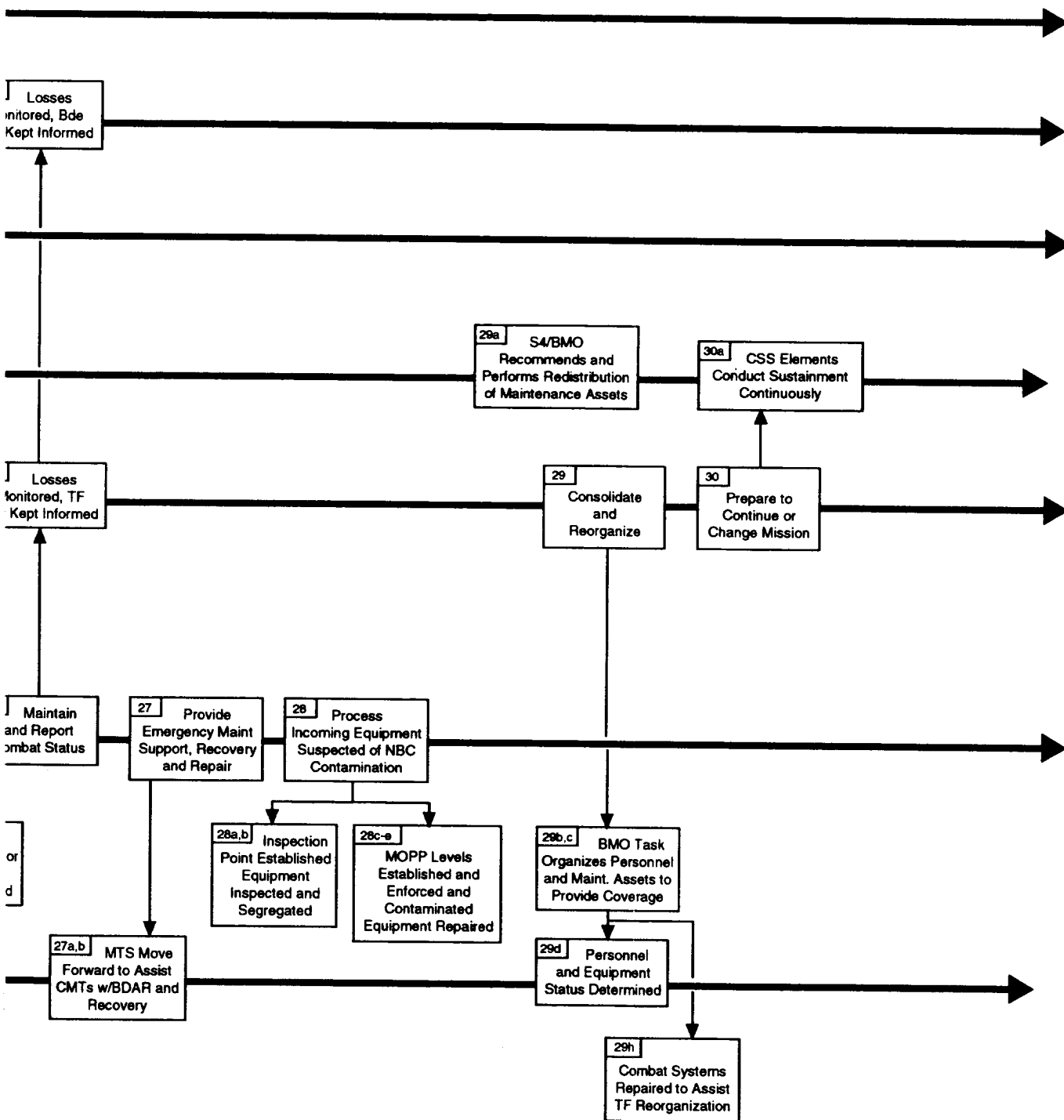
TASK FLOW EXECUTION



○ CCF □ (outside) Input or Output
 □ (inside) Task

CCF 31 — Maintain Weapons Systems and Equipment

FLOW UTION



CCF 31 — Maintain Weapons Systems and Equipment

OTHER CCF WHICH INTERACT WITH CCF 31

<u>CCF #</u>	<u>TITLE</u>	<u>LOGIC</u>
CCF 4	Disseminate Intelligence	Maintenance elements must know enemy situation in order to plan maintenance operations, position resources and react to enemy maneuver.
CCF 5	Conduct Tactical Movement	Maintenance plan to be in sync with movement plan.
CCF 6	Engage Enemy with Direct Fire and Maneuver	Priority maintenance requirement is to return battle damaged weapons systems to the battle. Recovery may be during direct fire battle.
CCF 7	Employ Mortars	Mission, employment and location must be known to plan for maintenance requirements, priorities and defense of maintenance facilities.
CCF 18	Plan for Combat Operations	Maintenance operations and priorities must be planned to ensure they support the commander's intent, are in sync with the maneuver plan/DST, and provide for displacement to sustain the force during movement.
CCF 19	Direct and Lead Unit During Preparation for the Battle	Supervision and direction of maintenance during preparation are necessary to ensure all maintenance operations are completed and that the force is ready prior to engaging the enemy. Maintenance plans must be rehearsed.
CCF 20	Direct and Lead Units in Execution of Battle	Maintenance elements continuously support the TF during and after battle. Maintenance and repair of combat systems is necessary to complete reconstitution and redistribution operations.
CCF 21	Overcome Obstacles	Special equipment (rollers, plows) and construction assets (dozers and scrapers) may be identified as maintenance priorities to ensure available for overcoming obstacles.
CCF 23	Provide Countermobility	Special equipment (dozers, scrapers, minelayers) may be identified as maintenance priorities to ensure availability for use in constructing obstacles.
CCF 24	Enhance Physical Protection	Special equipment (dozers and scrapers) may be identified as maintenance priorities to ensure availability for use in preparing positions.
CCF 25	Provide Operations Security	Maintenance elements are responsible for maintaining OPSEC in areas where they operate.

CCF 31 — Maintain Weapons Systems and Equipment

CCF #	TITLE	LOGIC
		Maintenance activities can be an indication of TF plans.
CCF 27	Provide Decontamination	Maintenance planners and commanders may identify decontamination equipment as a priority to be maintained. Maintenance elements may have to conduct decontamination operations on damaged equipment before repairs can be made.
CCF 28	Provide Transport Services	Transport required for parts, equipment and recovery of damaged systems. Maintenance of transport assets may be identified as a priority to ensure support to TF CSS operation.
CCF 29	Conduct Supply Operations	Supply of parts, equipment, and supplies is required for maintenance operations.
CCF 30	Provide Personnel Services	Personnel with required maintenance skills are essential to successful maintenance operations.
CCF 33	Treat and Evacuate Battlefield Casualties	Maintenance of evacuation systems supports evacuation and evacuation systems may be identified as a priority for maintenance. Knowledge of aid station locations is necessary for recovery operations.

CCF 31

KEY PARTICIPANTS BY TASK

<u>TASKS</u>	<u>PARTICIPANTS</u>
1. Issue TF Warning Order	TF Cdr, XO, S3
2. Analyze TF mission	All combined arms team
3. Determine maintenance requirements and priorities	XO, S3, S4, BMO, BMT
4. Update commander on combat status of units	XO, S1, S4, BMO, HHC Cdr, Co/Tm Cdrs/XOs
5. Assess status of maintenance assets	XO, S4, BMO, BMT, HHC Cdr
6. Provide maintenance support	BMO, BMT, Maint Section Chiefs, CMT Chiefs, FSB MSTs
7. Coordinate with FSB commander and staff for maintenance support	TF XO, S4, BMO, HHC Cdr, BMT, FSB Cdr/S3, Bde S4
8. Develop maintenance portion of TF service support annex	Bde S4, FSB Cdr, TF XO, S4, BMO, BMT, HHC Cdr
9. Evaluate ability of service support plan to support tactical operations	TF XO, S1, S4, BMO, BMT, HHC Cdr
10. Issue service support annex to TF OPORD	TF S3, S4, S1, BMO
11. Combat battlefield stress	All combined arms team
12. Provide maintenance support	S4, BMO, BMT, CMT Chiefs
13. Manage Class IX repair parts resupply	S4, BMO, BMT
14. Perform periodic services	CMT Chiefs, Plt Ldrs/PSG, BMO, BMT
15. Perform UMCP activities	BMO, BMT, FSB MSTs
16. Recover, repair and return non-mission capable equipment	BMO, BMT, Maint Sec Chiefs, CMT Chiefs, FSB MSTs
17. Continuously monitor and update combat status	S4, BMO, CTCP, Co/Tm Cdrs/XO/1SGTs, Sep Plt Ldrs, FSB MSTs
18. CTCP staff coordinates DS maintenance requests	CTCP pers, HHC Cdr, BMO, BMT Co/Tm, 1SGTs

CCF 31 — Maintain Weapons Systems and Equipment

TASKS	PARTICIPANTS
19. CTCP staff coordinates pickup of repaired/replacement vehicles	CTCP, BMO, BMT, Co/Tm 1SGT, Supply SGT
20. Field trains CP (FTCP) coordinates maintenance requirements with FSB	HHC Cdr, FTCP, FSB S3, BMO, BMT, Co./Tm 1SGT/Supply SGT
21. Push maintenance forward in support of combat operations	BMO, BMT, Maint Sec Chiefs
22. Conduct battle damage assessment and repair (BDAR) as far forward as possible	Veh Operators, Psgs, CMT Chief, MT Chiefs, 1SGT
23. Recover damaged equipment to next higher maintenance echelon	CMT Chief, 1SGT, TF Recovery Sec Chief, BMO, BMT
24. Combat trains and UMCP stay abreast of fighting forces needs	CTCP, S4, BMO, BMT, HHC Cdr
25. Perform controlled exchange	XO, S4, BMO, BMT
26. Maintain and report combat status	Co./Tm Cdr/XO/1SGT, Sep Plt Ldrs, TF S4, BMO, CTCP
27. Provide emergency maintenance support, recovery/repair	BMO, BMT, Maint Sec Chiefs
28. Process incoming equipment suspected of NBC contamination	BMO, BMT, Maint Sec Chiefs
29. Consolidate and reorganize	XO, BMO, BMT, Maint Sec Chiefs, Co/Tm Cdrs/XO/1SGT, Sep Plt Ldrs
30. Prepare to continue or change mission	All combined arms team

**KEY INPUTS/OUTPUTS TO CCF 31
(W/ CRITICAL INFORMATION)**

KEY INPUTS

B-1 Brigade OPORD

- a. Commander's intent.
- b. Scheme of maneuver.
- c. Task organization including effective time.
- d. Designation of route, axes of advance, or defensive positions/sectors.
- e. Reporting requirements and times.
- f. Types and lengths of combat operations.
- g. Tactical priorities.

B-2 Brigade Service Support Annex

- a. Brigade maintenance priorities.
- b. Displacement plan for BSA.
- c. CL IX/cannibalization/controlled substitution guidance.
- d. Mission reporting guidance.
- e. Main supply routes and Bde HET line.

B-3 Brigade Engineer Annex

- a. Requirements for special equipment maintenance (rollers, plows, dozers etc.)

FS-1 FSB OPORD

- a. Brigade CSS/maintenance requirements.
- b. Projected CSS requirements of division's "slice" elements.
- c. Equipment assets and status.
- d. FSB maintenance assets.
- e. Repair parts available.
- f. Maintenance support team (MST) employment.
- g. Division priorities from the DISCOM SS Annex.
- h. Current brigade assets in FSB.
- i. FSB policies and procedures for repair parts and maintenance support (required follow-up)
- j. Follow-up required on available reports on CLIX requisitions and available major assemblies.

TF-1 TF OPORD

- a. Commander's intent.
- b. Scheme of maneuver.
- c. Task organization including effective time.
- d. Designation of route, axes of advance, or defensive positions/sectors.
- e. Reporting requirements and times.
- f. Types and lengths of combat operations.
- g. Event/decision support template.
- h. Subordinate unit missions and locations.
- i. Guidance on maintenance priorities
- j. Tactical priorities.

TF-2 TF Engineer Annex

- a. Requirements for special equipment maintenance (rollers, plows, dozers, etc.)..

TF-3 TF Fire Support Annex

- a. Location and mission for TF mortar platoon.

TF-5 TF Tactical SOP

- a. LOGPAC procedures, configuration and schedules (maintenance requirements).
- b. Priorities and procedures for recovery of damaged equipment.
- c. Status report requirements and formats for equipment availability (maintenance) and repair parts (PLL/ASL) stockage level status.
- d. Evacuation criteria and timelines.
- e. MST employment procedures.
- f. Operational/employment procedures for maintenance teams (MT) and company maintenance teams (CMT).

KEY OUTPUTS

TF-4 TF Service Support Annex

- a. Maintenance time guidelines and priorities.
- b. Work priorities to repair critical weapon systems first.
- c. Identification of Critical Class IX and high demand PLL items.
- d. CL IX supply priorities.
- e. Location of UMCP.
- f. Priorities by unit, weapons system, equipment, Class IX items, PLL items, transportation, location .
- g. Controlled substitution/cannibalization guidance and procedures.
- h. BMO/BMT of cross-attached units requirements for tools, TMDE, and PLL.

TF-6 Combat Status and LOGSTATS

- a. Data pertains to organic, attached and supporting units.
- b. TF commander updated on critical CSS problems.
- c. Status and locations of CSS assets; ability of CSS assets to conduct operations.
- d. Maintenance priorities with Brigade S4 coordinated.
- e. Monitor ASL and PLL levels in direct support companies for brigade status report.
- f. Maintenance repair times with supported brigade and Maintenance Company.
- g. Requisition, acquisition, storage, and distribution of supplies.
- h. Equipment readiness.
- i. Consolidated brigade weapons status/combat power board.
- j. Monitor maintenance operations to evaluate the capability to support current operations.
- k. Evaluation of maintenance conditions and their impact on future brigade operations.
- l. MST support for:
 - Assistance with BDAR.
 - Movement forward to assist CMTs.
 - Additional recovery assets available.
 - Additional technical assistance available.
- m. Monitor and report status of CL IX requisitions at FSB.
- n. Monitor and report availability of major assemblies at FSB.

TASK LIST SUMMARY FOR CCF 31

See CCF 18 CCF 19, and CCF 20 for a detailed task analysis of the plan/prepare/execute process and all tasks. Key input/output and products are listed at pages 20–21. Planning tasks identified on this list from CCF 18 are considered by the analyst as critical to CCF 31. References are shown in parenthesis () after the task title. Task titles are either taken directly from an MTP task or subtask; or, are derived from portions of subtasks, implied tasks, or requirements in the MTPs, applicable FMs, or other related documents. Titles not taken directly from the MTP are marked with an asterisk (*).

PLANNING

1. **Issue TF warning order** (ARTEP 71-2-MTP, Task 7-1-3901/1, 3904/2; FM 71-2, Chap 2, FM 101-5; FM 71-123, Chap 1)
2. **Analyze TF mission** (ARTEP 71-2-MTP, Task 7-1-3901/1, 3902/1; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 101-5; FM 71-123, Chap. 1)
3. **Determine maintenance requirements and priorities** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 71-2, Chaps 2,7 (para 7-8); FM 100-10, Chap 8)
4. **Update commander on combat status of unit** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 71-2, Chap 2, 7 (para 7-12); FM 100-10, Chap 8)
5. **Assess status of maintenance assets** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 71-2, Chap 7, para 7-8)
6. **Provide maintenance support** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1280; FM 43-5, Chap. 2; FM 71-123, Chap. 8; FM 71-2, Chap 7 (para 7-1); FM 71-123, Chap. 8)
7. **Coordinate with FSB commander and staff for maintenance support** (ARTEP 71-2-MTP, Task 7-1-3914; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 63-2; FM 43-5, Chap. 2; FM 71-123, Chap. 8; FM 71-2, Chap 7)
8. **Develop maintenance support portion of TF Service Support Annex*** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-2, Chap 2; FM 71-123, Chap. 8; FM 43-5, Chap. 2, 5)
9. **Evaluate ability of service support plan to support tactical operations*** (ARTEP 71-2-MTP, Task 7-1-3912; FM 71-123, Chap. 8; FM 71-2, Chap 7, para 7-8)
10. **Issue Service Support Annex to TF OPORD** (ARTEP 71-2-MTP, Task 7-1-3901/7; FM 71-2, Chap 2)

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11. **Combat battlefield stress** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-11-MTP, Task 12-3-C018; FM 22-9; FM 71-123, Chap. 8; FM 71-2, Chap. 7)

PREPARATION 12. **Provide maintenance support to TF and its elements** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260, -3-1266, -3-1279, -3-1280, -3-1288; FM 71-123, Chap. 8; FM 71-2, Chap 7)

13. **Manage Class IX repair parts resupply** (ARTEP 71-2-MTP, Task 7-1-3912/3; ARTEP 17-236-10-MTP, Task 17-4-1284; FM 71-123, Chap 8; FM 110-14-2, Chap 10)

14. **Perform periodic services** (ARTEP 71-2-MTP, Task 7-1-3912; FM 71-123, Chap. 8; FM 71-2, Chap 7; FM 43-5, Chap. 7)

15. **Perform UMCP activities** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1266, 1312; FM 71-123, Chap. 8; FM 71-2, Chap 7; FM 43-5, Chap. 2, 3)

16. **Recover, repair and return nonmission capable equipment** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1280, 1288, 1289; FM 71-123, Chap. 8; FM 71-2, Chap 7; FM 43-5, Chap. 4)

17. **Continuously monitor and update combat status** (ARTEP 71-2-MTP, Task 7-1-3913; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 43-5, Chap. 8)

18. **CTCP staff coordinates DS maintenance requests** (ARTEP 71-2-MTP, Task 7-1-3913; ARTEP 17-236-10-MTP, Task 17-4-1276; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 71-123, Chap. 8)

19. **CTCP staff coordinates pickup of repaired/replacement vehicles** (ARTEP 71-2-MTP, Task 7-1-3913; ARTEP 17-236-10-MTP, Task 17-4-1276; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 71-123, Chap. 8)

20. **Field Trains CP (FTCP) coordinates maintenance requirements with FSB** (ARTEP 71-2-MTP, Task 7-1-3914; FM 43-5, Chap. 3; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 71-123, Chap. 8)

EXECUTION 21. **Push maintenance forward in support of combat operations** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260, 1280, 1288, 1289; FM 43-5, Chap. 2; FM 71-1, Chap 7 paras 7-3, 7-4; FM 71-123, Chap. 8; FM 71-2, Chap 7 paras 7-8, 9, 10)

22. **Conduct battle damage assessment and repair (BDAR) as far forward as possible** (ARTEP 71-2-MTP, Task 7-1-3912;

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ARTEP 17-236-10-MTP, Task 17-3-1279, 1280, 1288; FM 71-1, Chap 7; FM 43-5, Chap. 2, 3, App. A)

23. **Recover damaged equipment to next higher maintenance echelon** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1280, 1288, 1289; FM 43-5, Chap. 4; FM 71-123, Chap. 8; FM 71-2, Chap 7, para 7-24)
24. **Combat trains and UMCP stay abreast of fighting forces needs** (ARTEP 71-2-MTP, Task 7-1-3912, 3913/13, 3913/14; FM 71-123, Chap. 8; FM 71-2, Chap 7)
25. **Perform controlled exchange** (ARTEP 17-236-10-MTP, Task 17-3-1277; FM 43-5, Chap. 5)
26. **Maintain and report combat status** (ARTEP 71-2-MTP, Task 7-1-3912, 3913; FM 71-123, Chap. 8; FM 71-2, Chap 7)
27. **Provide emergency maintenance support, recovery/ repair** (ARTEP 71-2-MTP, Task 7-1-3912; FM 71-123, Chap. 8; FM 71-2, Chap 7)
28. **Process incoming equipment suspected of NBC contamination** (ARTEP 17-236-10-MTP, Task 17-3-1283; FM 71-123, Chap. 8; FM 71-2, Chap. 7; FM43-5, Chap. 4)
29. **Consolidate and reorganize** (ARTEP 71-2-MTP, Task 7-1-3022, 3023, 3912; ARTEP 17-236-10-MTP, Task 17-3-1301; FM 71-123, Chap. 8; FM 71-2, Chap 7, para 7-10)
30. **Prepare to continue or change mission** (ARTEP 71-2-MTP, Task 7-1-3023; ARTEP 17-236-10-MTP, Task 17-3-1301; FM 71-2, Chap 3, para 3-4/19, Chap 4, para 4-12)

MAINTAIN WEAPONS SYSTEMS AND EQUIPMENT PLANNING TASK LIST

See CCF 18 for a detailed task analysis of the planning process and all tasks. Key input/output and products are listed at pages 20–21. Planning tasks identified on this list from CCF 18 are considered by the analyst as critical to CCF 31. References are shown in parenthesis () after the task title. Task titles are either taken directly from an MTP task or subtask; or, are derived from portions of subtasks, implied tasks, or requirements in the MTPs, applicable FM's, or other related documents. Titles not taken directly from the MTP are marked with an asterisk (*).

1. **Issue TF warning order** (ARTEP 71-2-MTP, Task 7-1-3901/1, 3904/2; FM 71-2, Chap 2, FM 101-5; FM 71-123, Chap 1)

All subordinate elements are alerted of the impending mission with a warning order which addresses the mission, friendly forces, time of operation, special instructions, time and place of OPOD, and movement or preparatory instructions.

2. **Analyze TF mission** (ARTEP 71-2-MTP, Task 7-1-3901/1, 3902/1; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 101-5; FM 71-123, Chap. 1)

Specified, implied, and mission essential tasks; any constraints or limitations; and the acceptable level of risk are identified. Subordinate commanders/leaders receive a clear statement of the task force commander's intent.

- a. BMO analyzes maintenance platoon's mission and current tactical situation.
- b. BMO allocates CMTs, recovery vehicles, repair parts, and accomplish the mission.

3. **Determine maintenance requirements and priorities** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7 (para 7-8); FM 100-10, Chap 8)

Receive requirements/requests from subordinate units, determine/forecast maintenance requirements and establish maintenance priorities.

- a. Identify problems and requirements.
- b. Identify maintenance time guidelines.
- c. Establish work priorities to repair critical weapon systems first.
- d. Prioritize by weapon system, equipment, unit, mission, and available Class IV/PLL.
- e. Establish CL IX supply priorities
- f. Establish controlled exchange procedures

CCF 31 — Maintain Weapons Systems and Equipment

- g. Coordinates with BMO/BMT of cross-attached units and identify requirement for tools and TMDE
 - h. Assess mechanic strength and availability/PR of recovery/maintenance equipment.
 - i. Commander establishes cannibalization and controlled substitution/exchange policies.
4. **Update commander on combat status of unit** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 71-2, Chap 2, 7 (para 7-12); FM 100-10, Chap 8)

Combat status of task force (systems status, critical systems, personnel) is determined and provided to commander and staff. Information provided includes, at a minimum:

- a. Unit strength.
 - b. Number of systems on-hand—operational.
 - c. Number of systems NMC
 - d. Number of systems repairable.
 - e. Status of onhand Class IX, ASL/PLL stockage levels that are below minimum levels ("Red").
 - f. Leaders and staff provide TF commander with CSS estimate.
 - g. TF tactical SOP should include a standard format for reporting TF operational (maintenance and repair parts) status.
5. **Assess status of maintenance** assets (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 71-2, Chap 7, para 7-8)
- Commander and staff are continually updated on status of critical CSS assets and any shortfalls/problems that affect TF ability to conduct combat operations.
- a. BMO evaluates the capabilities of maintenance platoon elements.
 - b. Personnel shortages are identified by position, rank, MOS, etc.
 - c. Availability of vehicles, tools, TMDE, and support equipment.
6. **Provide maintenance support** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1280; FM 43-5, Chap. 2; FM 71-123, Chap. 8; FM 71-2, Chap 7 (para 7-1); FM 71-123, Chap. 8)

Assigned, attached, DS, and OPCON elements are provided maintenance and recovery support from unit positions back to the TF field trains.

- a. Maintenance assets are task organized and positioned to provide coverage for all subordinate elements.

CCF 31 — Maintain Weapons Systems and Equipment

7. **Coordinate with FSB commander and staff for maintenance support** (ARTEP 71-2-MTP, Task 7-1-3914; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-123, Chap. 8; FM 63-2; FM 43-5, Chap. 2; FM 71-123, Chap. 8; FM 71-2, Chap 7)

Requirements for intermediate direct support (IDS) maintenance and repair parts and intermediate general support (IGS) maintenance are coordinated with the FSB.

- a. BMO coordinates with support maintenance.
- b. Additional recovery assets are requested, if required.
- c. Technical assistance coordinated.
- d. FSB maintenance support team (MST) are positioned at UMCP to assist in repair of items evacuated to the UMCP.

8. **Develop maintenance support portion of TF Service Support Annex** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260; FM 71-2, Chap 2; FM 71-123, Chap. 8; FM 43-5, Chap. 2, 5)

TF XO, S4, and BMO anticipate CSS requirements and plan for employment of CSS assets (maintenance) to accomplish TF mission.

- a. Coordinate with the S1 for preparation of the service support annex.
- b. Submit the service support annex to the S3 for incorporation into the TF OPORD.
- c. Plan and coordinate transportation and movement of Class VII, IX and evacuated vehicles.
- d. Coordinate maintenance priorities with FSB.
- e. Establish procedures for MT/CMT operations.
- f. Identify locations of maintenance repair and collection facilities.
- g. Establish staff coordination for additional maintenance support.
- h. Coordinate cannibalization and controlled exchange policies with FSB.
- i. Coordinate mandatory parts list (MPL) and combat PLL for TF units.

9. **Evaluate ability of service support plan to support tactical operations** (ARTEP 71-2-MTP, Task 7-1-3912; FM 71-123, Chap. 8; FM 71-2, Chap 7, para 7-8)

XO ensures CSS staff is updated in their respective areas, that the CSS plan is fully developed, and that it will support the tactical operation.

- a. XO wargames with CSS staff (S4, BMO) to ensure that the tactical plan has the necessary maintenance support.

CCF 31 — Maintain Weapons Systems and Equipment

- b. BMO determines location of UMCP and task organizes maintenance, recovery and anti-armor maintenance assets to support the task force.
 - c. Maintenance support is focused forward to sustain maximum combat power.
- 10. **Issue Service Support Annex to TF OPORD** (ARTEP 71-2-MTP, Task 7-1-3901/7; FM 71-2, Chap 2)

TF issues the OPORD/FRAGO/WARNO. The OPORD contains all necessary CSS instructions.

 - a. Maintenance requirements, resources, timelines, priorities and locations are identified.
- 11. **Combat battlefield stress** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-11-MTP, Task 12-3-C018; FM 22-9; FM 71-123, Chap. 8; FM 71-2, Chap. 7)

Resources must be planned and taken to combat the battlefield stress brought on by the continuous operations nature of CSS activities.

 - a. Command sleep and rest plan must be enforced.
 - b. Platoon leader and team leaders execute leader actions to:
 - 1) Keep soldiers informed and updated on current situation.
 - 2) Issue orders to lowest possible level.
 - 3) Maintain a positive attitude.
 - 4) Quell and prevent rumors.

**MAINTAIN WEAPONS SYSTEMS AND EQUIPMENT
PREPARATION TASK LIST**

12. **Provide maintenance support to TF and its elements** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260, -3-1266, -3-1279, -3-1280, -3-1288; FM 71-123, Chap. 8; FM 71-2, Chap 7)

Maintenance support (repair, recovery, parts, evacuation) is provided for all assigned, attached, PS and OPCON units.

13. **Manage Class IX repair parts resupply** (ARTEP 71-2-MTP, Task 7-1-3912/3; ARTEP 17-236-10-MTP, Task 17-4-1284; FM 71-123, Chap 8; FM 110-14-2, Chap 10)

S4 monitors Class IX PLL requisition status to ensure critical systems do not remain unrepaired due to lack of parts.

- a. Requisitions for PLL Class IX shortages are submitted daily.
 - b. Receipt and status of requisitions at FSB is checked (monitored) frequently.
 - c. S4/BMO/BMT verifies that correct parts were ordered for NMCS systems.
 - d. Check is made for substitute or interchangeable parts.
 - e. Controlled exchange/cannibalization considered for critically needed parts.
14. **Perform periodic services** (ARTEP 71-2-MTP, Task 7-1-3912; FM 71-123, Chap. 8; FM 71-2, Chap 7; FM 43-5, Chap. 7)
- a. Operators perform PMCS IAW TMs; CMTs assist and supervise.
 - b. Nonready/limited ability systems are identified and reported.
 - c. Maintenance section schedules and performs periodic services IAW TMs; MTs support and assist CMTs.
 - d. Army oil analysis program conducted, when feasible, during lulls in battle.
15. **Perform UMCP activities** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1266, 1312; FM 71-123, Chap. 8; FM 71-2, Chap 7; FM 43-5, Chap. 2, 3)
- BMO establishes, coordinates, manages and employs maintenance resources from the UMCP to support the TF battle.
- a. UMCP is located forward in the combat trains area; specific location and movement is coordinated with S4 and CTCP.
 - b. Location must be within radio communication with CMTs.

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- c. Maintenance assets are task organized to provide MTs to support company maintenance.
 - d. Recovery time guidelines are established; usually under 2-hour repair done on-site, 2-6 hour repairs recovered to UMCP, and 6-hour repair recovered to HET coordinating points.
 - e. Repairs are conducted IAW TMs and commander's maintenance priorities.
 - f. BMO coordinates IDS maintenance requirements for MSTs with FSB support operations.
16. **Recover, repair and return nonmission capable equipment** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1280, 1288, 1289; FM 71-123, Chap. 8; FM 71-2, Chap 7; FM 43-5, Chap. 4)
- BMO assigns a repair/recovery mission to a maintenance team (MT).
- a. Disabled equipment is diagnosed and repaired on-site if repair possible within 2-hours.
 - b. Repairs requiring 2-6 hours are recovered to UMCP for repair (this recovery has priority).
 - c. Repairs requiring more than 6 hours are recovered to HET coordinating point for evacuation to FSB at BSA.
 - d. Repaired vehicles/equipment are moved forward on next LOGPAC if repaired in BSA.
 - e. Repaired vehicles/equipment are picked up by companies, upon notification, if repaired in UMCP. Crews stay with vehicles.
 - f. Repaired/replacement vehicles come forward prepared to fight (combat loaded, trained crews).
17. **Continuously monitor and update combat status** (ARTEP 71-2-MTP, Task 7-1-3913; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 43-5, Chap. 8)
- Combat trains command post (CTCP) staff collects combat status from all TF elements, informs commander and staff and updates. Information is collected and maintained on all organic, attached and supporting units, and includes:
- a. Unit strength.
 - b. Combat status (operational, NMC, repairable within 6 hours) of critical systems.
 - c. Status and location of critical CSS maintenance assets (PLL, MTs, recovery vehicles, etc.).
 - d. Status of all units is reported to Bde as required.

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18. **CTCP staff coordinates DS maintenance requests** (ARTEP 71-2-MTP, Task 7-1-3913; ARTEP 17-236-10-MTP, Task 17-4-1276; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 71-123, Chap. 8)
 - a. Maintenance team inspects equipment and determines if beyond unit maintenance capability; team chief requests support from MST.
 - b. BMO tasks to MST from FSB for IDS maintenance.
 - c. If beyond MST capabilities, platoon evacuates equipment to support maintenance at FSB for DS/IGS maintenance.
 - d. Platoon picks up equipment from support maintenance when repaired.
19. **CTCP staff coordinates pickup of repaired/replacement vehicles** (ARTEP 71-2-MTP, Task 7-1-3913; ARTEP 17-236-10-MTP, Task 17-4-1276; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 71-123, Chap. 8)
 - a. Coordinates unit and UMCP activities.
 - b. Informs maintenance.
 - c. Sets priorities during overload periods.
 - d. Informs units of vehicles to be returned to them and coordinates pickup.
20. **Field Trains CP (FTCP) coordinates maintenance requirements with FSB** (ARTEP 71-2-MTP, Task 7-1-3914; FM 43-5, Chap. 3; FM 71-123, Chap. 8; FM 71-2, Chaps 2, 7; FM 71-123, Chap. 8)
 - a. Coordinates maintenance requirements and reports status of vehicles.
 - b. FSB performs IDS level repairs on HHC wheeled vehicles and equipment located in TF field trains.

**MAINTAIN WEAPONS SYSTEMS AND EQUIPMENT
EXECUTION TASK LIST**

21. **Push maintenance forward in support of combat operations** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-4-1260, 1280, 1288, 1289; FM 43-5, Chap. 2; FM 71-1, Chap 7 paras 7-3, 7-4; FM 71-123, Chap. 8; FM 71-2, Chap 7 paras 7-8, 9, 10)
- a. Company maintenance teams (CMT) operate out of company trains.
 - b. Maintenance teams (MT) are formed by BMO out of maintenance service section assets, supplied with necessary tools, test equipment and parts, and are sent forward to support and assist CMTs.
 - c. Maintenance support teams (MST) from FSB, MTs, and recovery teams may be dispatched to repair and recover forward damaged vehicles beyond capabilities of CMT to repair on-site.
 - d. MT/MST will repair forward if repairs possible within 2 hours, otherwise equipment will be recovered rearward to level where repairs can be made.
22. **Conduct battle damage assessment and repair (BDAR) as far forward as possible** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1279, 1280, 1288; FM 71-1, Chap 7; FM 43-5, Chap. 2, 3, App. A)
- a. Operator reports status and attempts self-recovery and operator repair, if cannot, team chief performs BDA, reports findings to UMCP, repairs immediately, if possible.
 - b. CMT moves to site of damaged/disabled vehicle.
 - c. If CMT cannot repair, MT and/or MST from UMCP may be sent forward if CMT chief thinks system repairable on-site.
 - d. MT conducts BDA, plans repairs IAW maintenance time guidelines.
 - e. If not repairable on-site within time guidelines, system recovered to UMCP for repair by MTs and MST.
 - f. BMO determines priorities for repair, in order of:
 - 1) Equipment most essential to completion of immediate mission.
 - 2) Equipment requiring least time to repair.
 - 3) Equipment repairable but not in time to continue the mission.
23. **Recover damaged equipment to next higher maintenance echelon** (ARTEP 71-2-MTP, Task 7-1-3912; ARTEP 17-236-10-MTP, Task 17-3-1280; 1288, 1289; FM 43-5, Chap. 4; FM 71-123, Chap. 8; FM 71-2, Chap 7, para 7-24)

Company/team will recover disabled vehicles to a collection point if operator cannot use self-recovery.

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- a. If Co/Tm recovery assets not available, BMO will provide necessary information and will dispatch TF recovery assets from UMCP.
 - b. If necessary BMO coordinates with support maintenance (FSB/FS Maint Co) for additional recovery assets to support the tactical operation.
24. **Combat trains and UMCP stay abreast of fighting forces needs** (ARTEP 71-2-MTP, Task 7-1-3912, 3913/13, 3913/14; FM 71-123, Chap. 8; FM 71-2, Chap 7)
- CTCP personnel monitor TF command set and anticipate/identify support requirements.
- a. Maintenance requirements are identified based on tactical situation.
 - b. Units are contacted to verify needs.
 - c. Action is initiated by BMO/BMT to satisfy subordinate unit needs.
25. **Perform controlled exchange** (ARTEP 17-236-10-MTP, Task 17-3-1277; FM 43-5, Chap. 5)
- Exchanges are normally accomplished on items being evacuated for extensive, or time consuming, repair.
- a. BMO directs controlled exchange.
 - b. Serviceable parts, components or assemblies are removed from unserviceable, but repairable, equipment and are replaced by unserviceable parts, usually from vehicle being locally repaired.
 - c. Items to be exchanged are within the unit level of maintenance responsibility and approved by the commander.
 - d. Ensure repair parts cannot be obtained through local supply channels.
 - e. Reassemble donor vehicle, if necessary.
 - f. Protect donor vehicle from weather and indirect fire.
 - g. Notify records clerk of controlled exchange action so that document register, record of demands and due-in record can be adjusted.
26. **Maintain and report combat status** (ARTEP 71-2-MTP, Task 7-1-3912, 3913; FM 71-123, Chap. 8; FM 71-2, Chap 7)
- a. Monitor losses, keep the TF commander, and brigade informed of combat status and critical needs.
 - b. The combat and current and projected maintenance status are updated and reported to TF and brigade for all assigned, attached, OPCON, DS/GS units and they receive necessary maintenance support.
27. **Provide emergency maintenance support, recovery/ repair** (ARTEP 71-2-MTP, Task 7-1-3912; FM 71-123, Chap. 8; FM 71-2, Chap 7)

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CTCP personnel monitor TF command net and identify emergency maintenance support requirements.

- a. BMO arranges for MT to move forward to assist CMTs.
- b. MT will assist unit with BDAR and will coordinate for additional technical assistance or additional recovery assets, if necessary.

28. **Process incoming equipment suspected of NBC contamination** (ARTEP 17-236-10-MTP, Task 17-3-1283; FM 71-123, Chap. 8; FM 71-2, Chap. 7; FM43-5, Chap. 4)

Units operating in uncontaminated area establish NBC inspection points to monitor recovered equipment entering the area.

- a. Establish inspection and decontamination point.
- b. Platoon inspects equipment for contamination and segregates equipment.
- c. Establish and enforce MOPP levels and provide protection from contaminated equipment.
- d. Operate chemical detection equipment while repairing contaminated equipment.
- e. Go through a decontamination process.
- f. Make plans for unit to depart the area.

29. **Consolidate and reorganize** (ARTEP 71-2-MTP, Task 7-1-3022, 3023, 3912; ARTEP 17-236-10-MTP, Task 17-3-1301; FM 71-123, Chap. 8; FM 71-2, Chap 7, para 7-10)

Maintenance functions and organizations are reconstituted to provide continued maintenance support to the TF.

- a. S4/BMO recommends and performs redistribution of maintenance assets based on TF weapon system/equipment status.
- b. Maintenance assets are tasked organized and positioned to provide coverage for all subordinate elements.
- c. BMO cross-levels personnel and reassigns responsibilities to ensure control and unit combat capability.
- d. Determine personnel and equipment status.
- e. Assess damage to vehicles and cargo.
- f. Remove critical items from unrecoverable equipment.
- g. Evacuate and treat wounded and evacuate KIA.
- h. Repair combat systems to assist TF in conduct of consolidation and reorganization.

CCF 31 — Maintain Weapons Systems and Equipment

30. **Prepare to continue or change mission** (ARTEP 71-2-MTP, Task 7-1-3023; ARTEP 17-236-10-MTP, Task 17-3-1301; FM 71-2, Chap 3, 4; FM 71-123, Chap 8)
- a. CSS elements conduct sustainment operations continuously.
 - b. TF CSS elements maintain systems during lulls to prepare maneuver elements for the next operations.

CALL LESSONS LEARNED RELEVANT TO CCF 31
(EXTRACTS FROM LESSONS LEARNED BULLETINS)

1. NTC Commanders Memorandum — Nov 1985

Current task force level CSS doctrine generally works very well even under demanding circumstances and represents a significant improvement over previous procedures, e.g., the BMO coordinating all maintenance assets and actions; most classes of supply pushed forward in convoy under the control of a leader who can navigate (LOGPAC system); the HHC commander managing activities in the field trains; the combat trains and Unit Maintenance Collection Point (UMCP) in close proximity to each other but separate; and the S-1/S-4 well forward in the Combat Trains Command Post (CTCP) coordinating CSS, keeping track of the battle, and serving as the alternate TOC.

Emergency resupply and initial repair plus casualty and equipment evacuation are accomplished from the TF combat trains. Routine resupply and forward maintenance occur as a result of close coordination between the CTCP, the HHC commander in the field trains, and the parent unit in the Brigade Support Area (BSA). Unit unique repair parts, mechanics, and supplies are integrated into the TF LOGPAC system.

The detailed prioritization of specific CSS actions is a significant chain of command responsibility. Who gets the last available M113 engine -- a scout ITV, an infantry squad track, or the S3's command post vehicle?

Experience confirms the need for forward maintenance. A dedicated effort is required to prevent the flow of a disproportionate number of maintenance actions back to the BSA. The risk is an unacceptable equipment availability rate and a BSA that cannot move due to the presence of more dead combat vehicles than there are recovery assets to transport them. Repair parts (to include most major assemblies), contact teams, and evacuation vehicles must be pushed forward. There are very few combat vehicle problems short of severe battle damage that cannot be fixed within six hours, given the availability of a skilled mechanic and the requisite repair parts.

Accurate and near real time loss reporting is essential both for prompt repair and for effective synchronization of available combat power. Timely information on overall status and an indication of significant losses are passed to the TOC on the command net with details provided to the CTCP shortly thereafter on admin log. Frequent TOC-CTCP cross validation of equipment and personnel status is obviously required.

2. CALL Newsletter No. 1: Seven Operating Systems — January 1986

Successful units shift from a garrison "pull" system of supply based on requests to a combat "push" supply system based on prior staff planning. This planning process requires that:

- XO/S4s incorporate all CSS operators into the service support plan, i.e., S1, BMO, support platoon leader, medical platoon leader or battalion surgeon. These players must stay abreast of the current situation.
- Products and services should be pushed forward based on the mission of the unit and the hasty estimate done prior to the operation by the CSS staff.

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- The S-4/XO incorporates the service support plan into the operation order. He stays in close coordination with the tactical operations center, anticipates changes in the service support plan based on changes in the mission, and informs other CSS operators of the tactical situation.
- The service support plan includes how attachments and other elements, such as the scouts and mortars, are to be supported.
- Ensure maximum CSS support to OPCON and supporting elements. While not attached in the task organization they must come under the operational care of a designated maneuver unit.
- Have TF commanders and XO's who address OPCON and supporting elements in maintenance priorities. A bulldozer or GSR vehicle may be more important than a combat vehicle.
- Have BMOs and S4s who coordinate with parent units of OPCON and supporting elements for needed parts and supplies.

3. **Call Newsletter No. 5 Leadership — July 1987**

The logistic wargaming sessions should consider the specialized needs of both organic and attached units such as mortars and anti-tank platoons. DS units, such as Stingers and Vulcans, should also be considered.

4. **CALL Newsletter No. 88-3: Heavy Forces — Fall 88**

- Focus Forward. Proactive logistics requires planning and staff estimates. Staff officers at every level must look forward to the next operation.
- Fix Forward. Anything that can be fixed on site should be. Evacuation further to the rear than the unit maintenance collection point guarantees a substantial delay in return of that system to the battlefield.

Push vs. Pull System of Supply (CL III, IV, & V):

Logisticians must be proactive, anticipating needs and pushing supplies forward to sustain subordinates in continuous operations. The same is proving true for brigade and division logisticians now that we are conducting brigade operations. Experienced S4s can frequently be overheard saying something like the following to inexperienced company commanders, "Tell me what you have. I will then tell you what you are going to get based upon the established priorities."

Include CSS personnel in tactical planning process.

5. **CALL Newsletter No. 91-5: Battlefield Logistics — December 91**

- Maintainers must fix as far forward as possible to quickly restore combat power.
- Maintenance support teams augment the maneuver battalion's repair capability and are a combat multiplier.

The fix far forward concept is not working as well as it should at the CTCs. Maintenance companies are reluctant to push assets forward, preferring to fix rearward instead. This can reduce the maneuver commander's combat power at LD. The maintenance company should fix as far forward as possible. This involves understanding on the part of the maneuver commander as well. Many maneuver commanders are reluctant to allow CSS assets forward, thinking that they are "in the way". These maintenance assets will do much more good than harm and can extend the maneuver commanders combat power by increasing their maintenance support's capability to perform BDAR on the battlefield, resulting in faster repair turnaround times. Maintenance warrants must also lead this effort. It is rare on a CTC rotation that a maintenance warrant leaves the BSA and comes forward.

Maintenance Support Teams (MSTs)

MSTs are a key aspect of the commander's fix forward system. This concept positions maintenance personnel far forward where they have the greatest opportunity to fix equipment in place on the battlefield, and rapid-return it to the battle.

Maintenance Repair Guidelines

Units focus their maintenance fronts based upon the repair time guidelines stated in FM 63-20. These times are general rules that have been developed for a defensive scenario. As a result, maneuver units push maintenance support rearward to the field trains, tie up valuable recovery and evacuation assets, and generally lengthen the repair time. This dramatically impacts upon the decision to evacuate, the composition of forward stockages of repair parts, and the location of MSTs. There is most likely an answer to these questions, but whatever it is, it isn't understood very well.

TECHNIQUE(S): Push MSTs forward and adjust the repair times according to the factors of METT-T.

Daily reporting of logistical status to the brigade S4 by subordinate elements is generally not well done. The report formats developed for utilization have ranged from very minimal (Classes I, III, and IV) to formats comparable to those contained in FM 10-14-2 which are very comprehensive. In most cases, even the units with good formats do not execute the system with great success. Daily reports are seldom received with consistency from more than two or three of the subordinate units per rotation.

Sleep Plans

During the first days of alert notification for Operation DESERT SHIELD, lack of sleep caused problems for units and staffs. Commanders and staffs eventually sorted out schedules and procedures to ensure the ability to sustain continuous operations. This is especially critical for aviation units where crew rest is a major safety consideration. Transportation companies also are a critical concern. Some major commands saw an increase of military police stopping soldiers for apparent DUI. It was discovered that the soldiers were simply exhausted.

**LESSONS LEARNED INTEGRATED
INTO CCF 31 TASK LIST**

Planning Tasks

1. **Issue TF warning order**
2. **Analyze TF mission**
3. **Determine maintenance requirements and priorities**
 - The detailed prioritization of specific CSS actions is a significant chain of command responsibility. Who gets the last available M113 engine -- a scout ITV, an infantry squad track, or the S3's command post vehicle?
 - Products and services should be pushed forward based on the mission of the unit and the hasty estimate done prior to the operation by the CSS staff.
 - The service support plan includes how attachments and other elements, such as the scouts and mortars are to be supported.
 - Ensure maximum CSS support to OPCODE and supporting elements. While not attached in the task organization they must come under the operational care of a designated maneuver unit.
 - Have TF commanders and XOs who address OPCODE and supporting elements in maintenance priorities. A bulldozer or GSR vehicle may be more important than a combat vehicle.
 - Have BMOs and S4s who coordinate with parent units of OPCODE and supporting elements for needed parts and supplies.
4. **Update commander on combat status of units**
5. **Assess status of maintenance assets**
6. **Provide maintenance support**
7. **Coordinate with FSB commander and staff for maintenance support**
8. **Develop maintenance support portion of TF Service Support Annex**
 - Current task force level CSS doctrine generally works very well even under demanding circumstances and represents a significant improvement over previous procedures, e.g., the BMO coordinating all maintenance assets and actions; most classes of supply pushed forward in convoy under the control of a leader who can navigate (LOGPAC system); the HHC commander managing activities in the field trains; the combat trains and Unit Maintenance Collection Point (UMCP) in close proximity to each other but separate; and the S-1/S-4 well forward in the Combat Trains Command Post (CTCP) coordinating CSS, keeping track of the battle, and serving as the alternate TOC.

- XO/S4s incorporate all CSS operators into the service support plan, i.e., S1, BMO, support platoon leader, medical platoon leader or battalion surgeon. These players must stay abreast of the current situation.
 - Task Organize Company Maintenance Teams
 - Task Organize UMCP
 - Establish maintenance time guidelines
 - Establish CL IX priorities
- Logisticians must be proactive, anticipating needs and pushing supplies forward to sustain subordinates in continuous operations. The same is proving true for brigade and division logisticians now that we are conducting brigade operations. Experienced S4s can frequently be overheard saying something like the following to inexperienced company commanders, "Tell me what you have. I will then tell you what you are going to get based upon the established priorities."

9. Evaluate ability of service support plan to support tactical operations

The logistic wargaming sessions should consider the specialized needs of both organic and attached units such as mortars and anti-tank platoons. DS units, such as Stingers and Vulcans, should also be considered.

10. Issue Service Support Annex to TF OPORD

The S-4/XO incorporates the service support plan into the operation order. He stays in close coordination with the tactical operations center, anticipates changes in the service support plan based on changes in the mission, and informs other CSS operators of the tactical situation.

11. Combat battlefield stress

Sleep Plans

During the first days of alert notification for Operation DESERT SHIELD, lack of sleep caused problems for units and staffs. Commanders and staffs eventually sorted out schedules and procedures to ensure the ability to sustain continuous operations. This is especially critical for aviation units where crew rest is a major safety consideration. Transportation companies also are a critical concern. Some major commands saw an increase of military police stopping soldiers for apparent DUI. It was discovered that the soldiers were simply exhausted.

Preparation Tasks

12. **Provide maintenance support to TF and its elements**
13. **Manage Class IX repair parts resupply**
14. **Perform periodic services**
15. **Perform UMCP activities**
16. **Recover, repair and return nonmission capable equipment**
17. **Continuously monitor and update combat status**
18. **CTCP staff coordinates DS maintenance requests**
19. **CTCP staff coordinates pickup of repaired/replacement vehicles**
20. **Field Trains CP (FTCP) coordinates maintenance requirements with FSB**

Execution Tasks

21. **Push maintenance forward in support of combat operations**
 - Focus Forward. Proactive logistics requires planning and staff estimates. Staff officers at every level must look forward to the next operation.
 - Fix Forward. Anything that can be fixed on site should be. Evacuation further to the rear than the unit maintenance collection point guarantees a substantial delay in return of that system to the battlefield.
 - Maintenance support teams augment the maneuver battalion's repair capability and are a combat multiplier.
 - MSTs are a key aspect of the commander's fix forward system. This concept positions maintenance personnel far forward where they have the greatest opportunity to fix equipment in place on the battlefield, and rapid-return it to the battle.
22. **Conduct battle damage assessment and repair (BDAR) as far forward as possible**
 - Maintainers must fix as far forward as possible to quickly restore combat power.
 - Experience confirms the need for forward maintenance. A dedicated effort is required to prevent the flow of a disproportionate number of maintenance actions back to the BSA. The risk is an unacceptable equipment availability rate and a BSA that cannot move due to the presence of more dead combat vehicles than there are recovery assets to transport them. Repair parts (to include most major assemblies), contact teams, and evacuation vehicles must be pushed forward. There are very few combat vehicle problems short of severe battle damage that cannot be fixed within six hours, given the availability of a skilled mechanic and the requisite repair parts.

23. Recover damaged equipment to next higher maintenance echelon

- Tactical situation
- Echelon of work required
- Availability of repair parts
- Current workload
- Maintenance time guidelines
- The fix far forward concept is not working as well as it should at the CTCs. Maintenance companies are reluctant to push assets forward, preferring to fix rearward instead. This can reduce the maneuver commander's combat power at LD. The maintenance company should fix as far forward as possible. This involves understanding on the part of the maneuver commander as well. Many maneuver commanders are reluctant to allow CSS assets forward, thinking that they are "in the way". These maintenance assets will do much more good than harm and can extend the maneuver commanders combat power by increasing their maintenance support's capability to perform BDAR on the battlefield, resulting in faster repair turnaround times. Maintenance warrants must also lead this effort. It is rare on a CTC rotation that a maintenance warrant leaves the BSA and comes forward.

Maintenance Repair Guidelines

- Units focus their maintenance fronts based upon the repair time guidelines stated in FM 63-20. These times are general rules that have been developed for a defensive scenario. As a result, maneuver units push maintenance support rearward to the field trains, tie up valuable recovery and evacuation assets, and generally lengthen the repair time. This dramatically impacts upon the decision to evacuate, the composition of forward stockages of repair parts, and the location of MSTs. There is most likely an answer to these questions, but whatever it is, it isn't understood very well.

TECHNIQUE(S): Push MSTs forward and adjust the repair times according to the factors of METT-T.

24. Combat trains and UMCP stay abreast of fighting forces needs

25. Perform controlled exchange

26. Maintain and report combat status

- Accurate and near real time loss reporting is essential both for prompt repair and for effective synchronization of available combat power. Timely information on overall status and an indication of significant losses are passed to the TOC on the command net with details provided to the CTCP shortly thereafter on admin log. Frequent TOC-CTCP cross validation of equipment and personnel status is obviously required.
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execute the system with great success. Daily reports are seldom received with consistency from more than two or three of the subordinate units per rotation.

27. Provide emergency maintenance support, recovery/ repair

Emergency resupply and initial repair plus casualty and equipment evacuation are accomplished from the TF combat trains. Routine resupply and forward maintenance occur as a result of close coordination between the CTCF, the HHC commander in the field trains, and the parent unit in the Brigade Support Area (BSA). Unit unique repair parts, mechanics, and supplies are integrated into the TF LOGPAC system.

28. Process Incoming equipment suspected of NBC contamination

29. Consolidate and reorganize

30. Prepare to continue or change mission

**CCF 31
CRITICAL TASKS AND OTHER LINKAGES**

<u>TASK</u>	<u>OTHER LINKAGES</u>
1. Issue TF warning order	
2. Analyze TF mission	
3. Determine maintenance requirements and priorities	– Supervise Unit Maintenance Operations (01-4965.90-0001)
4. Update commander on combat status of units	– Prepare a Materiel Condition Status Report (MCSR) (03-4976.90-0501) – Provide Non-Mission Capable Information for the MCSR (101-539-1312) – Prepare for MCSR (091-309-0633)
5. Assess status of maintenance assets	– Supervise Unit Maintenance Operations (01-4965.90-0001) – Establish Tool Control Procedures (091-309-0614) – Plan and Conduct Tactical and Technical On-the-Job Training (091-309-0615)
6. Provide maintenance support	– Repair Unit Equipment (MTP Task 17-3-1280) – Supervise Unit Maintenance Operations (01-4965.90-0001) – Update Maintenance Workload Status (101-539-1403)
7. Coordinate with FSB commander and staff for maintenance support	
8. Develop maintenance support portion of TF Service Support Annex	
9. Evaluate ability of service support plan to support tactical operations	
10. Issue Service Support Annex to TF OPORD	
11. Combat battlefield stress	

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<u>TASK</u>	<u>OTHER LINKAGES</u>
12. Provide maintenance support to TF and its elements	<ul style="list-style-type: none">– Supervise Unit Maintenance Operations (01-4965.90-0001)– Establish and Operate Maintenance Facilities (091-309-0611)– Repair Unit Equipment (MTP Task 17-3-1280)– Update Maintenance Workload Status (101-539-1403)
13. Manage Class IX repair parts resupply	<ul style="list-style-type: none">– Supervise the Maintenance of Unit Prescribed Load List (PLL) (03-5101.00-0283; STP 21-II-MQS)– Maintain a Prescribed Load List and Process Change Listings (101-539-1127, 1116)– Maintain a Record of Demands—Title Insert (101-539-1102)– Maintain Mandatory Parts List (MPC) Record of Demands—Title Insert (101-539-1124)– Conduct Review and Inventory of the PLL Record of Demands—Title Insert (101-539-1115)– Initiate Follow-up, Documentation, Modification Action, and Cancellation Requests (101-539-1128)– Turn In and Receive Repair Parts (101-539-1131, 1132)
14. Perform periodic services	<ul style="list-style-type: none">– Perform Operator/Crew Preventative Maintenance Checks/Service (551-721-1306)
15. Perform UMCP activities	<ul style="list-style-type: none">– Supervise Unit Maintenance Operations (01-4965.90-0001)– Select and Establish UMCP as Field Maintenance Sites (MTP Task 17-3-1266)– Establish and Operate Maintenance Facilities (091-309-0611)– Assist in Tactical Employment and Operation of Unit Maintenance Section (091-509-0008, 0009)

CCF 31 — Maintain Weapons Systems and Equipment

<u>TASK</u>	<u>OTHER LINKAGES</u>
16. Recover, repair and return nonmission capable equipment	<ul style="list-style-type: none">– Navigate and Determine Location Using Map, Compass, and Terrain Association (071-329-1001, 1002, 1003, 1005, 1006, 1008, 1012)– Direct Vehicle and Equipment Recovery Operations (03-4995.90-0010)– Provide On-Site Maintenance Support (MTP Task 17-3-1280)– Repair Unit Equipment (MTP Task 17-3-1288)– Plan a Recovery Mission (MTP Task 17-3-1289)
17. Continuously monitor combat status of all TF elements	
18. CTCP staff coordinates DS maintenance requests	<ul style="list-style-type: none">– Conduct Transactions with Support Maintenance (MTP Task 17-4-1276)
19. CTCP staff coordinates pickup of repaired/replacement vehicles	
20. Field Trains CP (FTCP) coordinates maintenance requirements with FSB	
21. Push maintenance forward in support of combat operations	<ul style="list-style-type: none">– Direct Vehicle and Equipment Recovery Operations (03-4995.90-0010)– Provide On-Site Maintenance Support (MTP Task 17-3-1280)– Repair Unit Equipment (MTP Task 17-3-1288)– Plan a Recovery Mission (MTP Task 17-3-1289)
22. Conduct battle damage assessment and repair (BDAR) as far forward as possible	<ul style="list-style-type: none">– Perform Battle Damage Assessment (MTP Task 17-4-1279)– Repair Unit Equipment (MTP Task 17-4-1280)– Provide On-Site Maintenance Support (MTP Task 17-4-1288)

CCF 31 — Maintain Weapons Systems and Equipment

TASK

23. Recover damaged equipment to next higher maintenance echelon
24. Combat trains and UMCP stay abreast of fighting forces needs
25. Perform controlled exchange of repaired assemblies
26. Maintain and report combat status
27. Provide emergency maintenance support, recovery/ repair
28. Process incoming equipment suspected of NBC contamination
29. Consolidate and reorganize
30. Prepare to continue or change mission

OTHER LINKAGES

- Plan a Recovery Mission (MTP Task 17-4-1289)
- Tow Disabled Wheel and Track Vehicles (MTP Tasks 17-4-1291, 1292)
- Upright an Overturned Wheel or Track Vehicle (MTP Task 17-4-1293, 1296)
- Recover a Mired Wheel or Track Vehicle (MTP Task 17-4-1294, 1295)
- Provide Lift Support (MTP Task 17-4-1299)
- Maintain, Put On, Wear, Remove and Store M17-Series Protective Mask w/Hood (031-503-1001, 1002, 1003)
- Maintain, Put On, Wear, Remove and Store M24, M25, or M25A1 Protective Mask w/Hood (031-503-1011, 1012)
- Plan Decontamination Operations (031-503-1008)
- Decontaminate Equipment Using the M-13 or ABC M11 Decontaminating Apparatus (031-503-1022, 2002)

**MAINTAIN WEAPONS SYSTEMS AND EQUIPMENT
REFERENCES**

ARTEPs

17-236-10 MTP	Task Force Maintenance Platoon, ARTEP Mission Training Plan, Dec 1987
17-236-11 MTP	Task Force Support Platoon, ARTEP Mission Training Plan, Nov 1987
63-005-MTP	Battalion Hqs, FSB Heavy and Motorized Divisions
63-006-30-MTP	HQ Det, FSB, MSB Heavy and Motorized Divisions
71-1-MTP	The Tank and Mechanized Infantry Company and Company Team, Oct 1988
71-2-MTP	The Tank and Mechanized Infantry Battalion TF MTP, Oct 1988
71-3-MTP	Heavy Brigade Command Group and Staff, Oct 1988

FMs

10-14-2	Guide for the Battalion S4, December 1981 w/C1 dated Sep 1986
43-5	Unit Maintenance Operations, Sep 1988
63-2	Division Support Command, Armored, Infantry, and Mechanized Infantry Divisions – May 1991
63-20	Forward Support Battalion, Feb 1990
71-1	The Tank and Mechanized Infantry Company Team, Nov 1988
71-2	The Tank and Mechanized Infantry Battalion Task Force, Sep 1988
71-3	The Tank and Mechanized Infantry Brigade, May 1988
71-123	Tactics, Techniques and Procedures for Combined Arms Heavy Forces, Sep 1992
101-5	Command and Control for Commanders and Staff (Draft), July 1992
100-10	Combat Services Support, Feb 1988
101-10-1/2	Staff Officers Field Manual, July 1990

PUBLISHED LESSONS LEARNED

NTC Commanders Memorandum – November 1985

CALL Newsletter No. 1: Seven Operating Systems – January 1986

CALL Newsletter No. 5: Leadership – July 1987

CALL Newsletter No. 88-3: Heavy Forces – Fall 1988

CALL Newsletter No. 91-5: Battlefield Logistics – December 1991